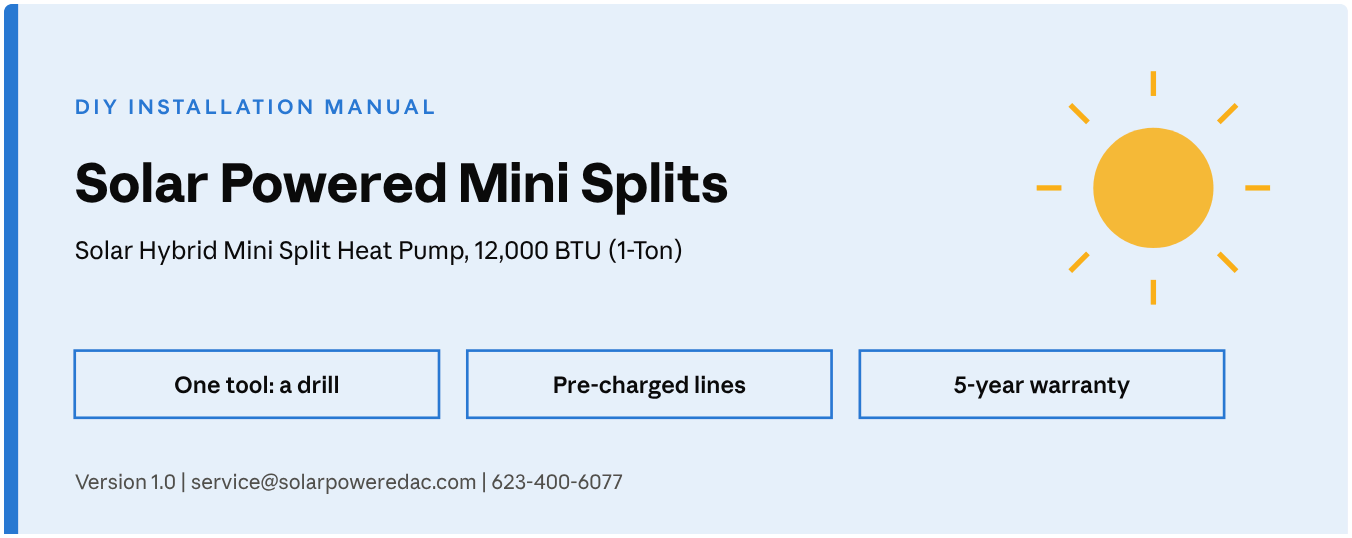
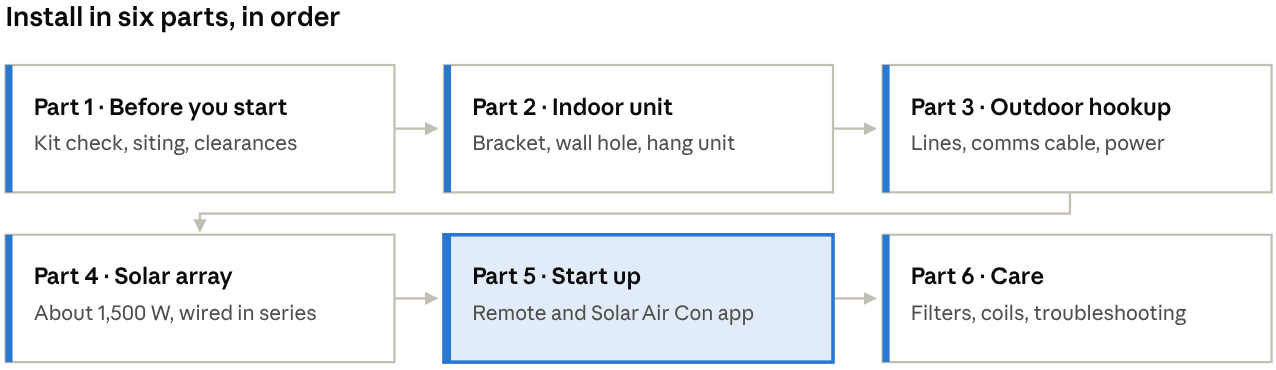
Solar Powered Mini Splits DIY Installation Manual

Nov 3, 2026 · @Joel gee



Solar Powered Mini Splits · DIY Installation Manual



Install at a glance

Welcome to Solar Powered Mini Splits

Thank you for choosing Solar Powered Mini Splits. Your Offgrid kit cools in summer, heats in winter, and runs on sunshine first — so most daytime comfort costs you nothing.

We built this kit so a homeowner can install it with one tool: a drill. Everything else is in the box. If you hit a snag this guide doesn't cover, contact our support team (see the last page). We read every message and use it to make this guide better.

How your system works

Your system has two parts: an **indoor unit** mounted on the wall and an **outdoor unit** that sits outside. Together they move heat out of your home in summer and into it in winter. There is no ductwork, so very little energy is lost, and the cooling goes exactly where you need it.

The compressor is **variable speed**. Instead of slamming on at full power and shutting off, it ramps up gently, slows as the room nears your set temperature, and then holds there. That avoids the power surge older units draw every time they start, which saves energy and keeps the room more even.

Three ways to power it:

1. **Solar only.** The unit starts and runs directly from your panels. Below **200 W** of solar, only the indoor fan runs. At **200 W and above**, the compressor starts, and it speeds up as more solar is available. Partly cloudy skies mean partial speed.
2. **Solar + grid (hybrid).** Plug in the included 120 V cord and the unit uses solar first. The grid fills in only the shortfall, so the unit always has full power.
3. **Grid only.** At night or on rainy days, the plugged-in unit runs like a standard mini split. Panels are not required for this mode.

Truly do-it-yourself. The refrigerant line set comes **pre-charged** and connects by hand — no vacuum pump, nitrogen, gauges or flaring tools. The control cable twists together in seconds. The 120 V power cord is pre-wired and UL listed. The solar leads are pre-wired to the outdoor unit, and a DC disconnect switch is included so connecting your panels is plug-and-switch.

Control the unit with the handheld remote or the Solar Air Con app, which lets you adjust, schedule and track solar savings from anywhere with an internet connection.

Safety first

- Drawings in this guide explain the steps. Your unit's exact shape and color may differ slightly.
- Wear **safety glasses** and **ear protection** when drilling. Drilling the wall hole is loud and throws debris.
- This unit uses **R-32 refrigerant**. It is more efficient and has a far lower global-warming impact than older R-410A, but it is classed as **mildly flammable** (ASHRAE 34). Never install or service the unit near an open flame.

- Turn the DC disconnect **OFF** and unplug the power cord before any service.
- If you are not comfortable with any step, stop and contact our support team or a licensed installer.

Part 1 — Before you start

Step 1: Check your kit

Unpack both boxes and confirm every item below before you drill anything. If something is missing, contact our support team before you start.

Everything ships in the kit except a drill

Indoor unit box

Indoor wall unit
Mounting bracket (screwed to unit back)
Remote + wall holder, AAA batteries in
Comms cable 4 m (pre-wired)
Condensate hose 4 m (pre-installed)

Outdoor unit box

Outdoor unit
Line set 3 m, pre-charged, attached
10 ft 120 V power cord, attached
Solar leads with MC4 ends, attached
Self-sealing quick connectors (4)

Install hardware bag

Hole saw bit for your drill
Drill bits: masonry, wood, Phillips
Bracket screws + wall anchors
Mini level, 3 zip ties, 2 gloves
Wall sleeve + sealing putty

Solar + finishing parts

DC disconnect switch
Solar cables 2 x 10 m (red and black)
Spare MC4 connectors + 2 release tools
Foam insulation tape + electrical tape
Outdoor drain fitting

Figure 1 · What's in the kit

Not included:

- Solar panels with the HVAC-only kit (Complete Kits ship panels separately). See Part 4 for sizing.
- Mounting hardware for your panels.
- Longer line sets, comms cables or condensate hose, and extension cords for the power cord.
- Equipment pad, wall brackets for the outdoor unit, and line-set cover.
- A condensate pump (needed only if the indoor unit is not on an exterior wall).

Step 2: Choose where each unit goes

Put the outdoor unit at the side or back of the house, and the indoor unit on the **inside of that same wall**, directly opposite. Keeping them close shortens the install and lets the included line set reach.

An exterior wall also lets condensate drain out by gravity. Whenever humidity is above about 20%, the indoor unit pulls water from the air. On an interior wall you would need a condensate pump to move that water outside — workable, but one more part that has to keep working.

Keep the indoor unit away from: heat, steam or gas sources; curtains, clothing or other flammables; anything that blocks airflow; doorways; direct sunlight.

Keep the outdoor unit away from: heat, steam or gas sources (sunlight is fine); the exhaust of another outdoor unit; trash, dry grass or other flammables; anything that blocks airflow; doorways; dusty or dirty spots.

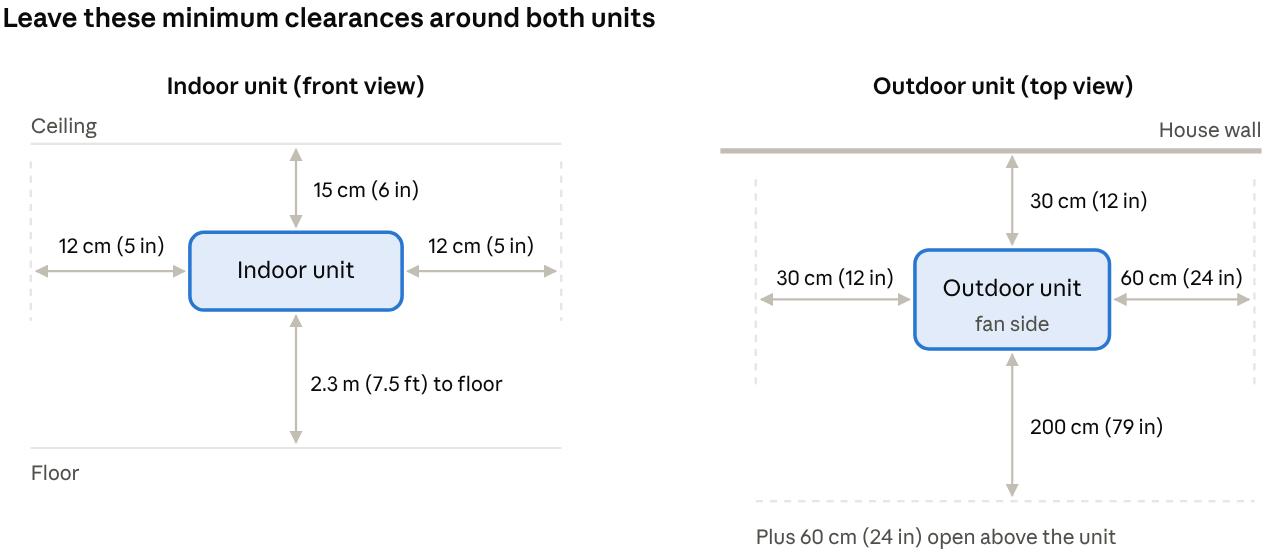


Figure 2 · Minimum clearances

If you install more than one outdoor unit, never let one unit's hot exhaust blow into another unit's intake. Set them side by side facing the same way, or far enough apart that the air does not recirculate.

Length limits. The kit includes a **3 m (9 ft 10 in) line set**, **4 m (13 ft) comms cable**, **4 m (13 ft) condensate hose** and a **10 ft 120 V power cord**. That covers most single-wall installs.

- Maximum height difference between indoor and outdoor unit: **8 m (26 ft 3 in)**.

- Maximum total line length (horizontal + vertical): **15 m (49 ft 2 in)**.

For a second-floor room, either mount the outdoor unit on wall brackets right outside the room, put it on the roof above (a condensate pump may be needed), or keep it on the ground and order a longer line set and comms cable from our support team.

Step 3: Pick up any extras you need

- **Equipment pad or wall brackets** lift the outdoor unit off the ground where water puddles or bugs, dirt and debris collect. In dry areas a concrete slab or pavers is fine.
- **Line-set cover** protects the outdoor bundle from constant sun and gives a cleaner look.
- If you add a drain fitting to the outdoor unit (Step 9), raise the unit about **1.5 in** for clearance.

Part 2 — Mount the indoor unit

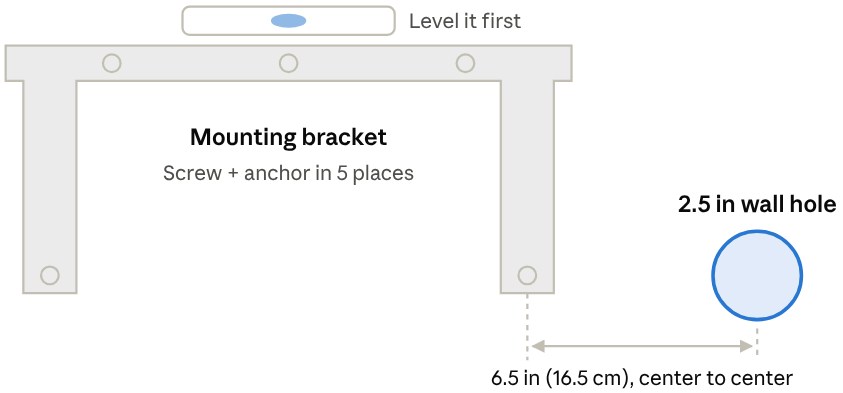
Step 4: Check the wall

Before you mark anything, make sure nothing is hiding behind the spot. Look for outlets, switches and plumbing nearby, and run a stud finder over the area. You do not want to drill into wiring, pipes or a stud.

Step 5: Mount the bracket

1. Lay the indoor unit face down on a towel or cardboard — never directly on the floor.
2. Remove the single screw holding the bracket to the back of the unit, and lift the bracket off.
3. Hold the bracket on the wall and level it. Set the included mini level on either upper hook; if one hook is level, the whole bracket is level.
4. Mark the 5 screw holes. Drill with a **13/64 in** bit (or the **1/4 in** masonry bit for brick or block).
5. Tap in 5 wall anchors until flush, then screw the bracket on. Save 2 anchor sets for the DC disconnect and 2 for the remote holder.

The wall hole sits 6.5 in right of the bottom-right screw



Drill 13/64 in pilot holes (1/4 in masonry bit for brick or block), then tap in the anchors.

Figure 3 · Bracket and wall-hole layout

Step 6: Drill the 2.5 in wall hole

Mark a point **6.5 in to the right** of the bottom-right screw (Figure 3). This hole carries the line set, comms cable and condensate hose. If your 120 V outlet is indoors, the power cord also comes back through it.

1. **Check first.** Unscrew the cup from the hole saw and drill a small pilot hole with the center bit alone. Shine a flashlight in. If you see a stud, wiring or pipe, pick a nearby spot.
2. **Drill at a 15° downhill angle** toward the outside. The slope lets condensate drain by gravity and eases the bend in the line set.

Use only this right-side hole position. Do not drill the left-side position marked on some brackets.

Step 7: Swing the line-set stubs out the back

The copper stubs ship folded along the back of the unit. Leave the strap, tape, zip ties and plastic caps on — the caps keep drywall dust out of the refrigerant lines, and the tape helps the bundle slide through the wall.

1. Make a pivot with your thumb and index finger where the stubs leave the unit.
2. Very slowly rotate the stubs around that pivot until they point straight back from the unit.

3. Curve gently — never bend copper to a sharp angle or it will kink.

The two stubs, the condensate hose and the comms cable are now lined up to pass through the wall.

Step 8: Hang the unit

The indoor unit weighs about **25 lb**. Rest it on a towel-covered table near the wall, or have a helper hold it.

1. Feed the **comms cable** through the hole first, then the **condensate hose**.
2. Feed the line-set stubs through. You can rest the unit's weight on the bracket hooks while you work.
3. Hook the top of the unit onto the upper bracket tabs.
4. Press the bottom of the unit onto the lower tabs until it sits flush against the wall.

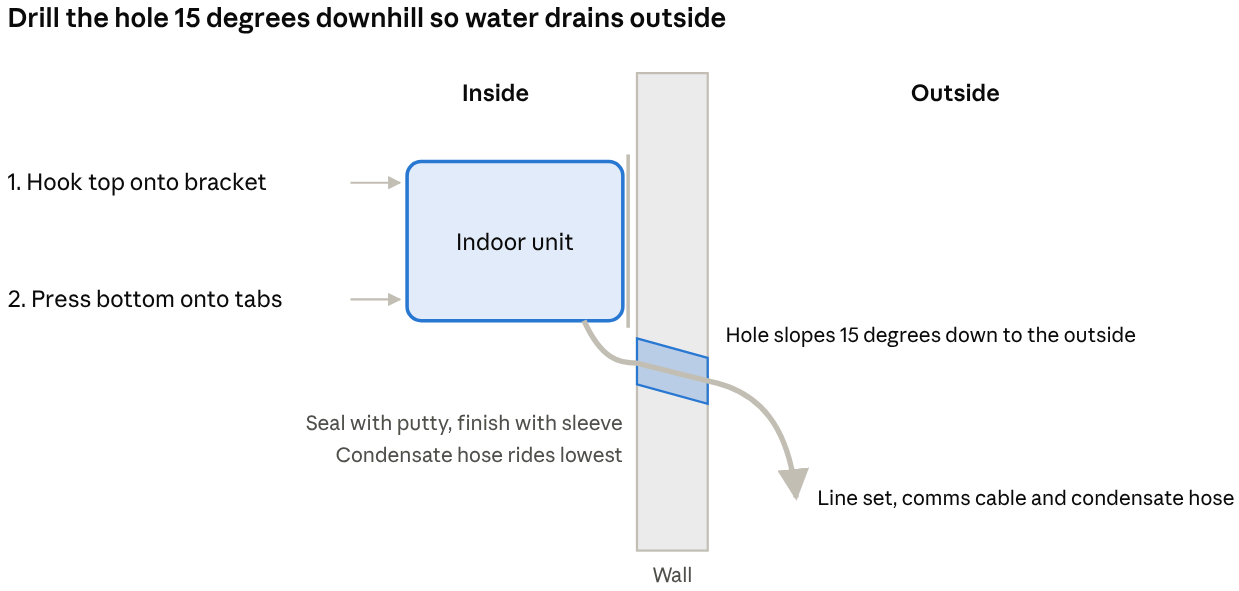


Figure 4 · Wall cross-section and hanging order

To take the unit off later, push up on the two triangle marks under the unit to release the lower tabs. The hard part is done — time to head outside.

Part 3 — Outdoor connections

Step 9 (optional): Add the outdoor drain fitting

In heating mode the outdoor unit defrosts itself, and water drips from a hole in its base. If that water would puddle on a walkway, snap the included drain fitting into the hole and run a hose (not included) away from the unit. Raise the unit about **1.5 in** on its feet or a pad to make room for the fitting.

Step 10: Prepare the stubs

1. Check that the **condensate hose sits at the bottom of the wall hole**. Water will not run uphill.
2. Remove the tape or plastic wrap from the indoor stubs, then pull off their plastic caps.
3. Pull the plastic caps off the ends of the outdoor unit's line set.
4. Gently curve the stubs downward to about 45°, using one hand as a pivot so they never kink.

Step 11: Connect the line set

1. Remove the cardboard from the outdoor unit and uncoil its line set up toward the stubs.
2. Thread the **1/4 in** connector onto the 1/4 in stub **by hand**. Gloves are optional; wrenches are not allowed.
3. Keep turning until the two halves meet with **no gap** (Figure 5). A partly tightened connector will not let refrigerant flow.
4. Repeat for the **3/8 in** connector.

The two lines are different sizes, so each connector only fits its matching stub.

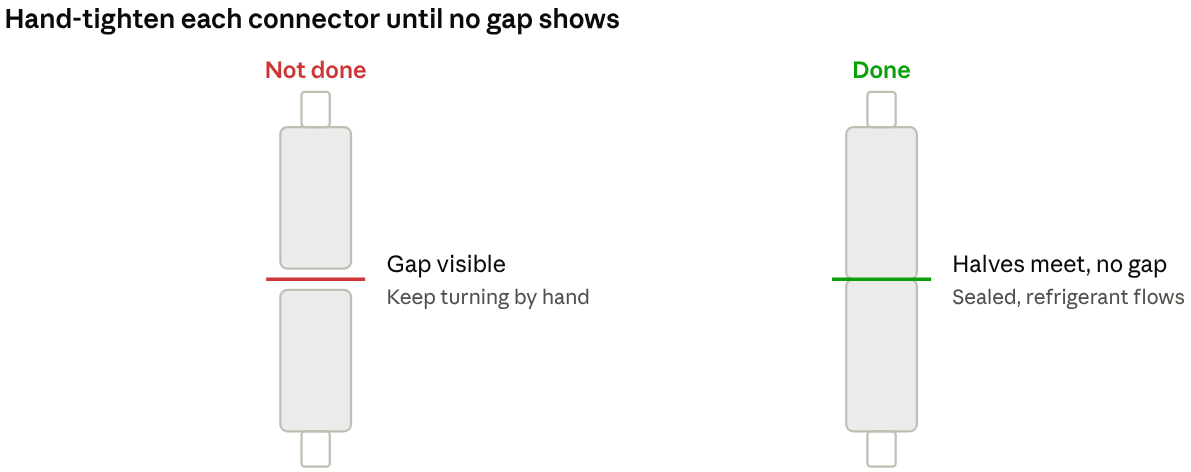


Figure 5 · Quick-connector check

Step 12: Insulate and route the line set

Exposed copper loses capacity and drips condensation onto the wall, so cover every bit of it.

1. Slide the existing foam insulation up to the flare nut on each connector.
2. Wrap the connectors and copper with **electrical tape** to hold the foam in place.
3. Wrap the whole joint with the wider **foam insulation tape**, then touch up any gaps with electrical tape.
4. Straighten about **4 ft** of the line set below the joint. Using your hand as a pivot, curve it gently down against the wall. Never make a 90° bend.

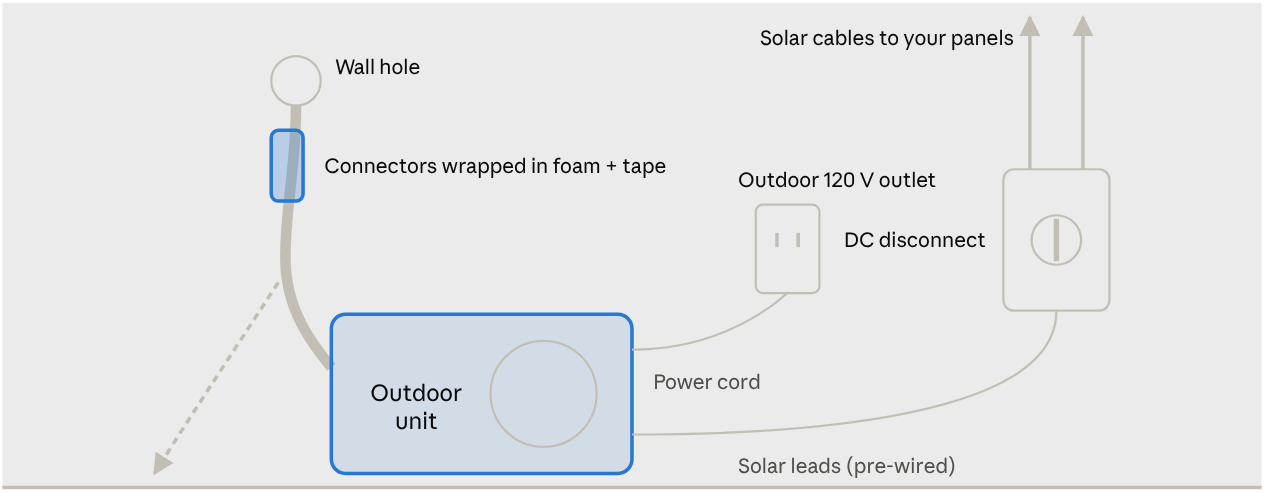
It will not look pretty yet. A line-set cover tidies it up and protects it from sun.

Step 13: Route the condensate and tidy the bundle

Point the condensate hose where water will not cause damage or puddle on a walkway. Strap the hose, comms cable and line set loosely to the wall with one-hole straps and the included zip ties.

On a ground-mount install, extra line set can loop or rise near the unit without harm. On a roof mount, keep loops to a minimum so oil returns to the compressor properly.

Outside, everything runs down the wall to the unit



Dashed: condensate hose, pointed away from walkways
Curve the line set gently against the wall; never bend it to a sharp corner.

Figure 6 · Outdoor wall layout

Step 14: Connect the comms cable

The comms cable from the indoor unit plugs into the port on the outdoor unit. Line up the grooves, apply light pressure, and feel for a soft snap.

The comms cable connects in three moves

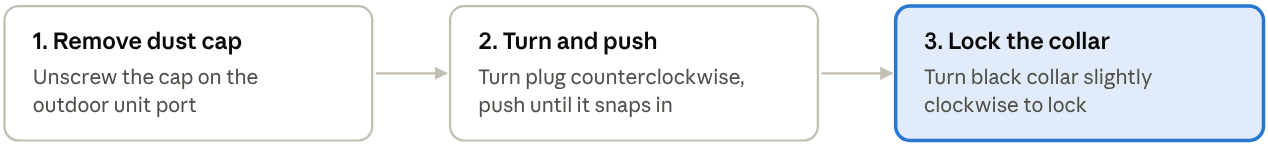


Figure 7 · Comms cable connection

Step 15: Plug in grid power

The power cord is pre-wired and UL listed. Plug it into a **110–120 V, 60 Hz** outlet on a **15 or 20 A** breaker. Use a weatherproof (in-use) cover on outdoor outlets.

The unit draws up to about **10 A** on the hottest days. Avoid running other heavy loads on the same circuit, or the breaker may trip.

Tip: You can skip ahead to Step 18 and test the unit on grid power now, before connecting solar.

Step 16: Mount and connect the DC disconnect

The DC disconnect is the on/off switch between your panels and the unit.

1. Hold it on the wall where the unit's pre-wired solar leads can reach its bottom. Mark the top and bottom holes.
2. Drill about **1 1/8 in** deep with the **5 mm** bit (or **6 mm** for masonry), insert the last two anchors, and screw the box to the wall.
3. Snap the unit's solar leads into the **bottom** of the disconnect. Push until the MC4 connectors click. They only fit one way, so wire color does not matter.
4. The solar cables from the **top** of the disconnect run to your panels (Part 4).
5. Leave the knob **OFF** until the panels are connected. Then turn it in line with the wires to **ON**.

Use the blue MC4 release tools if you ever need to pull these connectors apart. Turn the disconnect OFF before any service on the unit.

Part 4 — Connect your solar array

Step 17: Build a ~1,500 W series array

Aim for about **1,500 W** of panels wired in **series**. That is enough to run the compressor at full speed on hot afternoons, when panels produce below their rating and the compressor draws its peak (about **1,100 W**). Complete Kits ship with panels already sized for the unit; HVAC-only buyers supply their own.

This guide does not cover mounting panels — roofs, racks and ground mounts all differ. Here is what you need to know to wire them to the unit.

Panel rating	Panels for ~1,500 W	Typical array Voc
~500 W	3	~120–150 V
~380 W	4	~160–200 V

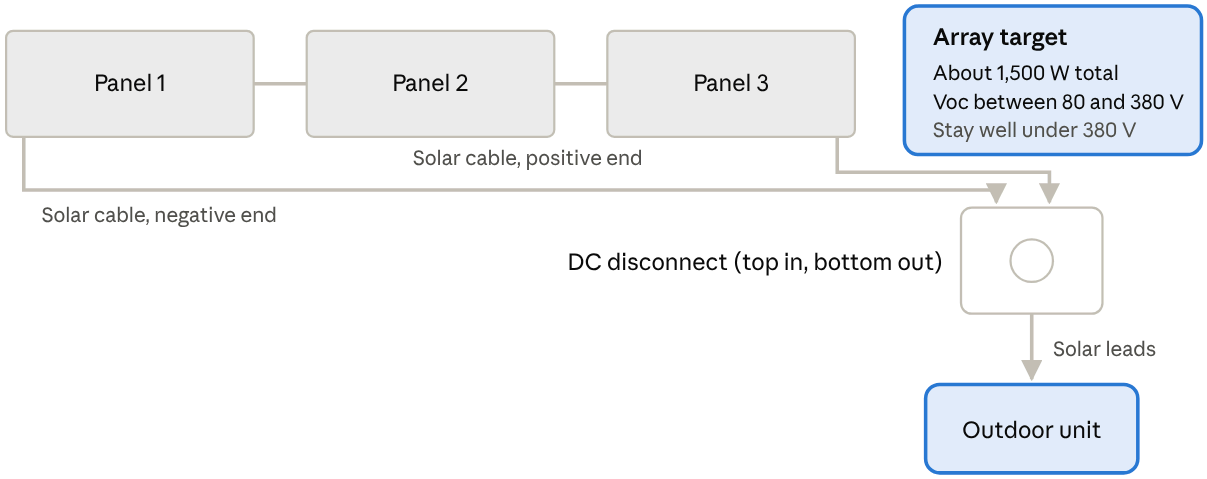
Voltage rules:

- Array open-circuit voltage (**Voc**) must be **at least 80 V** and **no more than 380 V**. Each panel lists its Voc on the label on its back; add them up for a series string.
- Voc rises in cold weather, so stay **well under 380 V** to protect the unit and keep your warranty valid.
- An array near the 80 V minimum (for example, 2 × 490 W panels at about 88 V) will run, but will lean on grid power more often, especially in heat or late in the day.
- More than about 1,500 W adds little. The unit cannot use it.

Wiring:

1. Connect the panels in a single series string: click the **+** MC4 lead of one panel into the **−** lead of the next.
2. You end up with one free **+** and one free **−** lead. Connect them to the two 10 m solar cables.
3. Run the solar cables to the **top** of the DC disconnect and click them in.
4. Turn the disconnect **ON**.

Wire the panels in one series string to the DC disconnect



Click the + lead of each panel into the - lead of the next. Never join two + or two - ends.

Figure 8 · Series wiring, panels to unit

Tips:

- Use identical panels. Mixing models drags the whole string down to the weakest panel's current.
- Put panels where they get strong sun all year, with no afternoon shade.

- If the unit sees sun but gets no solar power, check every MC4 joint. Two + or two − ends joined in a row reverse polarity, and the unit will refuse to run on solar.

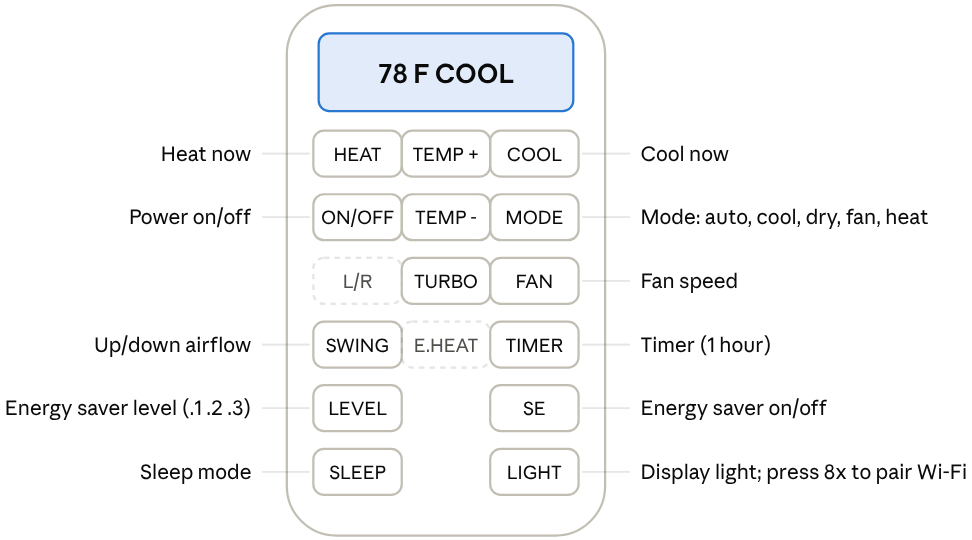
Part 5 — Start up and control your unit

Step 18: Test with the remote

1. The AAA batteries come installed in the remote. Point it at the indoor unit and press **ON/OFF**.
2. The display shows a plug icon when the unit is on grid power.
3. Allow about **3 minutes** for the unit to start. The lower louver opens and conditioned air begins to flow.

The unit starts in **Celsius**. To switch to Fahrenheit, turn the unit off, then press **TEMP +** and **FAN** together. The next time you turn it on, both the remote and the unit show °F. These steps are also printed on the back of the remote.

What each remote button does



Dashed buttons (L/R, E.HEAT) are not used on this model. TEMP +/- set the target temperature; TURBO runs maximum fan.

Figure 9 · Remote control layout

Modes and timers in detail:

- **Auto** heats or cools to hold the room within about ±7°F of your set point.
- **Dry** runs slower in cooling to pull more moisture from the air, using less energy.
- **Fan** moves air only; the compressor stays off.

- **Timer** turns the unit off 1 hour after you press it while running, or on 1 hour after you press it while off.
- **Sleep** eases the set point 2°F toward room temperature, then another 2°F an hour later, and holds there for 8 hours.
- **Left/right airflow** has no motor. Slide the gray tabs inside the air outlet by hand, one on each side.

Step 19: Install the Solar Air Con app

The app does everything the remote does, plus remote access over the internet, schedules, control of several units at once, and a running total of your solar savings. It is available for iPhone and Android.

1. Search for the **Solar Air Con** app in the App Store or Google Play, or scan the QR code on the inside cover of this guide.
2. Tap **Sign Up**. Enter your country and email, accept the privacy policy and user agreement, and tap **Get Verification Code**.
3. Enter the code from your email, create a password, and tap **Done**. Use **Log In** if you are ever signed out.
4. Connect your phone to **2.4 GHz** Wi-Fi (most routers have it; 5 GHz-only networks will not work). Turn on **Bluetooth** and allow **Location** when asked.
5. Tap **+** or **Add Device**.
6. Put the unit in pairing mode: with the unit on, press **LIGHT 8 times within 10 seconds**. The unit beeps and a Wi-Fi icon appears. Pairing mode lasts **3 minutes**.
7. In the app, tap **Add** when the unit appears, then tap **+** beside it. Enter your Wi-Fi password if asked.
8. Pairing takes a few seconds to about a minute. Rename the unit (for example, "Bedroom") and tap through to the controls.

Step 20: Get to know the app

- **Power sources** at the top show solar (PV) watts and grid (AC) watts feeding the unit right now.
- **Total solar savings** counts energy supplied by your panels. It reads zero until panels are connected.
- **The dial** shows room temperature and set point. Red means heating, blue means cooling. Drag it to change the set point.

- **Swipe up** for power, heat, cool, mode, fan speed, up/down airflow, display light, sleep, °F/°C and energy saver. Buttons marked with an X are not available on this unit.
- **Cloud Schedule** sets on and off times by day. Tap **Add**, choose the time, days and On or Off, then tap **Save**. Add a second schedule for the off time.
- **Historical electricity data** shows past energy use.

Optional: Energy saver mode

On sunny days you want every watt of solar going to comfort. On cloudy days, at night, or on batteries, energy saver mode caps the compressor speed to cut grid or inverter use. Solar is still used first.

Display shows	Compressor limit	Use it when
78.**0**	None (normal)	Full comfort
78.**1**	25% of maximum	Biggest savings, e.g. bedrooms at night
78.**2**	50% of maximum	Balanced
78.**3**	75% of maximum	Small savings; often no change under light load

- **Remote:** press **SE** to turn energy saver on, then press **LEVEL** to cycle .1, .2 and .3.
- **App:** tap the energy saver button. It uses the last level set on the remote.
- The trade-off: a slower compressor delivers warmer air in cooling and cooler air in heating.
- Energy saver turns off when you turn the unit off. Turn it back on each time.

Part 6 — Maintenance and troubleshooting

Routine maintenance

Clean coils and filters keep heat moving between the two units. That keeps capacity up and protects the compressor.

What	How	How often
Indoor air filters	Remove, rinse with tap water, dry, reinstall (Figure 10)	Monthly in heavy use; quarterly otherwise; more often in dusty homes
Indoor coil (fins under the filters)	Compressed air, a soft-brush vacuum, or coil cleaner	Yearly or as needed
Outdoor coil (fins opposite the fan)	Coil cleaner and a garden hose	Yearly or as needed
Around the outdoor unit	Clear leaves, dirt and debris	Ongoing

Dish soap or a little bleach is fine on the filters; rinse well. Never use solvents. Turn the unit off before cleaning.

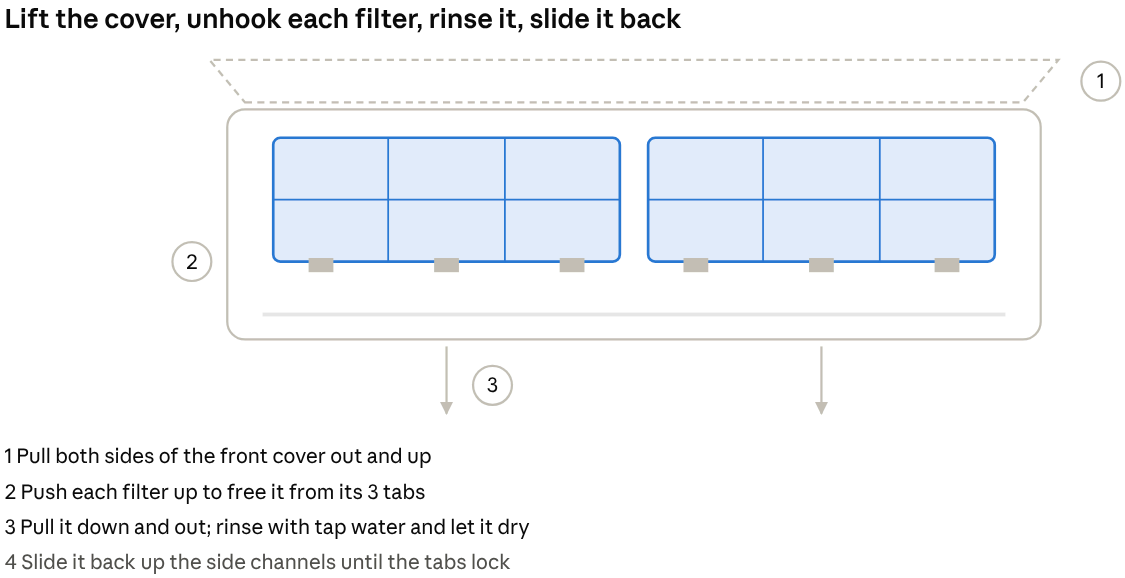


Figure 10 · Removing the indoor filters

Troubleshooting

Problem	Likely cause	What to do
Unit won't turn on or stops (grid or hybrid)	No power at the outlet, or the circuit is overloaded	Check the outlet and breaker. Give the unit at least 10 A; move other big loads (hair dryer, heater) off the circuit, or use a 20 A circuit.
Unit won't turn on (solar only)	Less than 200 W of solar — cloudy, dusk or night	Normal. The compressor starts at 200 W. Plug in grid power for full-time operation.
Sunny, but no solar power	MC4 connector loose or polarity reversed	Check every MC4 joint clicks. Joints must go + to −; two + or two − in a row blocks solar.
Won't restart right after it was running	3-minute compressor protection	Wait 3 minutes after a power loss or a heat/cool mode change.
New unit has power but won't start	Comms cable not seated, or new circuit wired with reversed polarity	Re-seat and lock the comms cable (Figure 7). Have the outlet polarity checked.
Previously working unit won't respond	Remote batteries or app connection	Replace the AAA batteries, or check your phone's internet connection.
Switches to fan only by itself	Set point reached, or not enough power for the compressor	Normal at set point. On solar only or a small inverter, add grid power.
Weak cooling	Set point too high; dirty filter or coils; blocked airflow; open doors or windows; strong sun or many heat sources; Sleep on; solar only on a cloudy day	Lower the set point, clean filters and coils, clear obstructions, close doors and blinds, turn off Sleep, plug in grid power.
Weak heating	Below −22°F (−30°C) outside, or cold drafts	Use backup heat in extreme cold; close doors and windows; add insulation.

Problem	Likely cause	What to do
White mist from indoor unit	Humid room air meeting cold supply air	Normal. It fades as humidity drops.
"dF" or "HS" on display; mist from outdoor unit	Automatic defrost in heating mode	Normal. Defrost takes about 5 minutes, most often near 32°F or in humid weather.
Hissing or rushing sounds	Refrigerant flow, louver reset, or plastic flexing after heating	Normal, especially at start, stop, defrost and mode changes.
P2, P4 or P7 on display	Solar supply is unstable	Normal on solar. Add grid power, or wait for steadier sun.
E or F codes (E0, E1, F1…)	Fault detected	Wait 10 minutes. If it stays, turn the unit off, switch the DC disconnect OFF and unplug for 2 minutes, then restart. Still there? Contact our support team with the code.

Your 5-year warranty

Solar Powered Mini Splits warrants your unit to keep running as designed for **5 years from the ship date**. If it doesn't, we will repair or replace it.

To keep your coverage:

- Install the unit following this guide, including the clearances, line-length limits and hand-tightened connectors.
- Keep your solar array within **80–380 V Voc**, well under the maximum.
- Plug into a correctly wired 110–120 V, 60 Hz outlet on a 15 or 20 A breaker.
- Clean the filters and coils as shown in Part 6.

To make a claim, contact our support team with your order number, the unit's serial number, and a short description or video of the problem.

Support

We want you thrilled with your system. If something isn't right, call before you post a review — we will make it right.

- **Email:** service@solarpoweredac.com
- **Phone:** 623-400-6077 (real people, no phone tree)

Happy with your install? A review, a photo of your setup, or a referral to a friend helps us more than you know.