



SOLAR GUIDE · PUNJAB

Solar inverter buying guide

The inverter turns the panels' power into the power your home or business uses, and it is the part most likely to need attention during the life of a system. This guide covers how to pick one that fits the system and the connection.

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RSK Solar Energy, UTL Solar distributor
E-203, Phase 8B Industrial Area, Sector 74, Mohali
+91 90419 96918 · WhatsApp · rksolarenergy@gmail.com

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UTL inverters

1. Match the inverter to the system type

System	Inverter	Battery
On-grid	Grid-tie inverter	None
Hybrid	Hybrid inverter or grid-export PCU with a battery charger	Yes
Off-grid	Off-grid solar inverter or PCU	Yes

An on-grid inverter cannot run batteries. If you think you will want backup later, choose a hybrid inverter now. The system selector helps decide the type.

2. Get the size right

- On-grid: match the inverter to the panels. A 3 kW array gets an inverter of about 3 kW.

- Hybrid and off-grid: the inverter's kVA must cover everything that runs at the same time during a cut, plus the brief surge when a fridge, pump, cooler or AC motor starts. Leave headroom; an inverter at its limit every evening trips more often.

The [battery backup calculator](#) sizes the inverter for the loads you choose. For running ACs, see [two 1.5 ton ACs on a 5 kW hybrid](#).

3. Match the battery voltage

For hybrid and off-grid systems, the inverter's battery voltage must match the bank: 12 V is one battery, 24 V two, 48 V four and 96 V eight 12 V batteries. Bigger systems use higher voltages to carry the same power at lower current. For a lithium battery, check that the inverter supports lithium charging.

4. Single or three phase

Match the inverter to your electricity connection. Most homes are single phase. Larger homes and most commercial buildings are three phase.

5. Charge control: MPPT

An MPPT charge controller draws more from the panels than a PWM one, especially when the panel voltage is well above the battery's. On a rooftop system with large panels, choose MPPT. [MPPT and PWM compared](#) explains why.

6. Transformer or transformerless

Transformerless inverters are lighter, smaller and usually more efficient, and most on-grid and modern hybrid inverters are built this way. Transformer-based units are heavier but rugged, and some off-grid systems rely on their isolation. Whatever the design, check the surge rating against your largest motor. See [transformer and transformerless inverters](#).

7. Monitoring

Choose an inverter that shows what it makes: a display at least, and ideally an app over Wi-Fi or mobile data. Monthly readings are how you notice a fault or dirty panels early. [How to read your solar meter and bill](#) shows how to use them.

8. Warranty and service

Inverters usually need attention sooner than panels. Before you buy, check:

- the manufacturer's warranty period, in writing;
- what it covers, and whether repair or replacement is on site;
- who handles a claim near you.

[Solar inverter warranties in India](#) covers what to ask.

9. Mounting

Mount the inverter in a shaded, ventilated place out of the rain, close enough to the panels and the meter board to keep cables short. Heat shortens an inverter's life.

UTL inverters

We supply UTL's on-grid inverters in single and three phase, hybrid inverters and PCUs, and off-grid solar inverters. The [UTL inverter catalogue](#) lists each model with its ratings, and the comparisons with [Luminous](#), [Havells](#) and others set them against other brands' published figures.

Questions we are asked

What size inverter do I need for a 3 kW solar system?

For an on-grid system, an inverter of about the same size as the panels: around 3 kW. For a hybrid or off-grid system, size it to everything that runs at

once during a cut, plus the surge when a motor starts.

Do I need a three-phase inverter?

Only if your connection is three phase. Match the inverter to the supply: most homes are single phase, and larger homes and most commercial buildings are three phase.

How long does a solar inverter last?

Usually less long than the panels, which is why the warranty and local service matter. Check the manufacturer's warranty period and who handles repairs before you buy.

Work out your own figures

Battery backup calculator

The inverter and batteries to keep chosen loads running through a power cut.

Solar system selector

Five questions to on-grid, hybrid, off-grid or a solar pump.

Solar calculator

Size, subsidy, cost and payback from your PSPCL bill.

Figures on subsidies, tariffs and schemes are as published by the government at the dates shown and can change. Prices and generation figures are estimates for planning, not a quotation or a guarantee.