

PM Surya Ghar Muft Bijli Yojana: On-Grid Solar Kit Installation Guide

We congratulate you on your excellent choice of our Saatvik Solar On-Grid Solar Kit. Please do spare some time in reading this installation manual.

1. Solar Kit Unboxing & Physical Inspection Guide

1.1 Check the condition of Boxes and Pallet:

- Water damage.
- Broken pallets.
- Mishandling signs (damage, dents).

1.2 Open Outer Packaging: Cut straps carefully with a knife cutter. Remove boxes from the pallet carefully.

1.3 Remove Protective Materials:

- Foam sheets.
- Bubble wrap.

1.4 Check the condition of Solar Panels:

- Glass cracks or scratches.
- Frame bending.
- Junction box damage.

1.5 If Damage or Shortage Found: Inform Dealer/Saatvik immediately. Share photos/videos. Do NOT install damaged material.

1.6 Check the solar kit for each box material as per packing list: Solar panels; Inverter; Mounting Structure (MMS) – Optional; DC/AC cables; Connectors (MC4); Earthing kit – Optional; Hardware (nuts, bolts, clamps) – Optional.

2. Solar Structure Module Mounting Installation Step-by-Step Guide

2.1 Site Preparation: Measure rooftop dimensions (length, width, obstacles). Identify shadow-free areas (avoid shadow of water tanks, parapet walls, trees). Identify the south, as modules need to be installed south-facing.

2.2 Base Plate Marking: Mark the front base plate hole on rooftop for drilling (refer drawing). Mark the second front base plate hole for drilling on rooftop; the distance from first base plate to second base plate (horizontal) to be followed as per drawing.

2.3 Drilling (Front Side): Drill holes (M12) using hammer drill machine with a depth of 70 mm.

2.4 Rear Base Plate Marking: Mark the rear base plate hole behind the first base plate on rooftop for drilling (refer drawing). Mark the second rear base plate hole for drilling on the rooftop (refer drawing).

2.5 Drilling (Rear Side): Drill holes (M12) using hammer drill machine with a depth of 70 mm.

2.6 Base Plate Fixing: Fix the base plate using anchor fasteners (M10 × 150 mm length) provided.

2.7 Structure Assembly: Fix the rear and front legs as per drawing on base plate and tighten with nut-bolt (M10 × 70 mm). Fix the front leg as per drawing on base plate and tighten with nut-bolt (M10 × 70 mm). Fix the rafter as per drawing on first front and rear leg and second front and rear leg. Fix the solar panel horizontally on the rafter and tighten it with nut-bolt.

2.8 Final Work: After completing the structure and panel mounting, cover up the base plate with concrete to avoid leakage. Tighten all the nut-bolts properly so that they are not loose and blown away by the wind.

2.9 Number of Earthing and Uses of Earthing:

- LA Earthing (Lightning Arrestor) – Earth 1.
- DC Earthing (Panel structure) – Earth 2.
- AC Earthing (Inverter body) – Earth 3.

3. Installation of Chemical Earthing – Step-by-Step Procedure

3.1 Location Selection: Choose a moist soil area (avoid rocky or dry soil if possible). Maintain a minimum 3 meters distance between two earth pits. Keep away from building foundations.

3.2 Pit Excavation: Dig a pit of standard size and ensure vertical straight excavation.

- depth 1.5 meters,
- diameter 300 mm.

3.3 Electrode Placement: Fill the pit up to 500 mm with coal, salt, and soil powder and water in the earthing pit. Place the electrode vertically inside the pit. The top electrode remains 150 mm above ground level. The electrode is properly centered.

3.4 Pit Filling: Fill the pit using chemical compounds along with charcoal and soil mixture. Pour a layer of compounds. Add water to activate it. Repeat layer-by-layer filling.

3.5 Final Setup: Fix the earthing pit cover around the pit top.

3.6 Earthing Connection: Connect 6 mm wire to electrode. Strip the wire and punch 6 mm thimble with earthing wire. Connect the other ends to the respective points. Connect the earthing wire with electrode using a GI coated nut-bolt.

Note: For inverter mounting, setting, and Wi-Fi configuration, refer to the inverter user manual.

4. DC Connection – Step-by-Step

4.1 Connection Flow: Solar Panels → DCDB → Inverter.

4.2 Series Connection: Positive (+) of one panel → Negative (–) of next panel. Maintain proper string voltage within the inverter limit as per the inverter specification sticker.

4.3 Cable and Polarity Check: MC4 connectors available at DC cable both ends. Ensure that the polarity is correct on the panel, DCDB, and inverter sides. The polarity is clearly marked on the inverter, DCDB, and panel.

4.4 Panel to DCDB Connection: After arranging the solar panels in series, connect the DC positive wire to the positive MC4 connector of the solar panel and the DC negative wire to the negative MC4 connector of the solar panel. Route the other end of the DC positive wire to the DCDB, cut the wire to the required length, and connect it to the positive input terminal (DC fuse) of the DCDB. Similarly, route the other end of the DC negative wire to the DCDB, cut the wire to the required length, and connect it to the negative input terminal of the DCDB.

4.5 DCDB to Inverter Connection: Connect the cut piece of the DC positive wire to the positive output terminal of the DCDB, then connect the other end (fitted with an MC4 connector) to the positive MC4 connector of the inverter's DC input. Likewise, connect the cut piece of the DC negative wire to the negative output terminal of the DCDB, then connect the other end (fitted with an MC4 connector) to the negative MC4 connector of the inverter DC input.

4.6 Final Step: Once the DC connections are complete, follow the instructions provided in the inverter user manual to start the inverter.

5. Lightning Arrester (LA) Installation – Step-by-Step

5.1 Placement: The height of the LA (Lightning Arrestor) must be at least one foot higher than the highest point of the solar panels. Mount the LA either at a corner of the roof or directly on the solar panel structure. If the LA is mounted on the solar panel structure, ensure that it does not cast any shadow on the solar panels.

5.2 Connection: Once the LA is mounted, crimp a 6 mm thimble onto a 6 sq. mm wire and connect it to the LA using a nut and bolt assembly. Route the other end of the 6 sq. mm wire to the earthing pit using wire clamps. Ensure that the path to the earthing pit is as short and straight as possible. Crimp a 6 mm thimble onto the other end of the 6 sq. mm earthing wire and connect it to a dedicated earthing pit.

5.3 Final Check: Ensure all connections are firm and no loose joints are there.

6. ACDB Mounting and Connection

6.1 Mounting: Open the ACDB packing box and check its physical condition. Mark the drilling points for the ACDB on the wall adjacent to the inverter. Drill holes at the marked locations using a drilling machine. Insert the provided plastic rawl plugs (gitti) into the drilled holes. Finally, mount the ACDB securely onto the wall using the supplied screws.

6.2 Output Connection: Remove the AC cable from the box and strip the outer insulation using a wire stripper. Insert the AC cable into the output slot of the ACDB. Strip the Phase, Neutral, and Earth conductors, crimp the provided thimbles onto each conductor, and connect them to the output terminals of the ACDB, ensuring correct polarity as per the markings.

6.3 Inverter Connection: Cut the other end of the AC cable to the required length for connection to the inverter input. To connect this end, refer to the user manual provided inside the inverter box and assemble the supplied AC connector with the cable as per the instructions.

6.4 Input Connection: Insert one end of the remaining AC cable into the input slot of the ACDB. Strip the Phase, Neutral, and Earth conductors, crimp the provided thimbles onto each conductor, and connect them to the ACDB input terminals in accordance with the marked polarity.

6.5 Grid Connection: Route the AC cable to the utility meter using the wire clips provided in the packing box and connect it securely to the grid supply after disconnecting power.

6.6 Final Check: Check all connections properly before switching on power.

Upon successful completion of all the above steps, the system is ready for commissioning and operation.

Saatvik Green Energy Limited

Address: Tower A, IFFCO Complex Plot No. 3, Institutional Area Sector 32, Gurugram Haryana – 122001, India

Website: www.saatvikgroup.com

Toll-Free Number: 1800-547-1151