SNE-1 Solar Node Enclosure

Assembly guide · kit v2.12 · chassis interface I1 · Puget3D · puget3d.com



Before you start

Directions are given **as seen from the front, standing facing the lid**. All screws are A2 stainless. The M3 brass inserts for the chassis plate come pre-installed in the box.

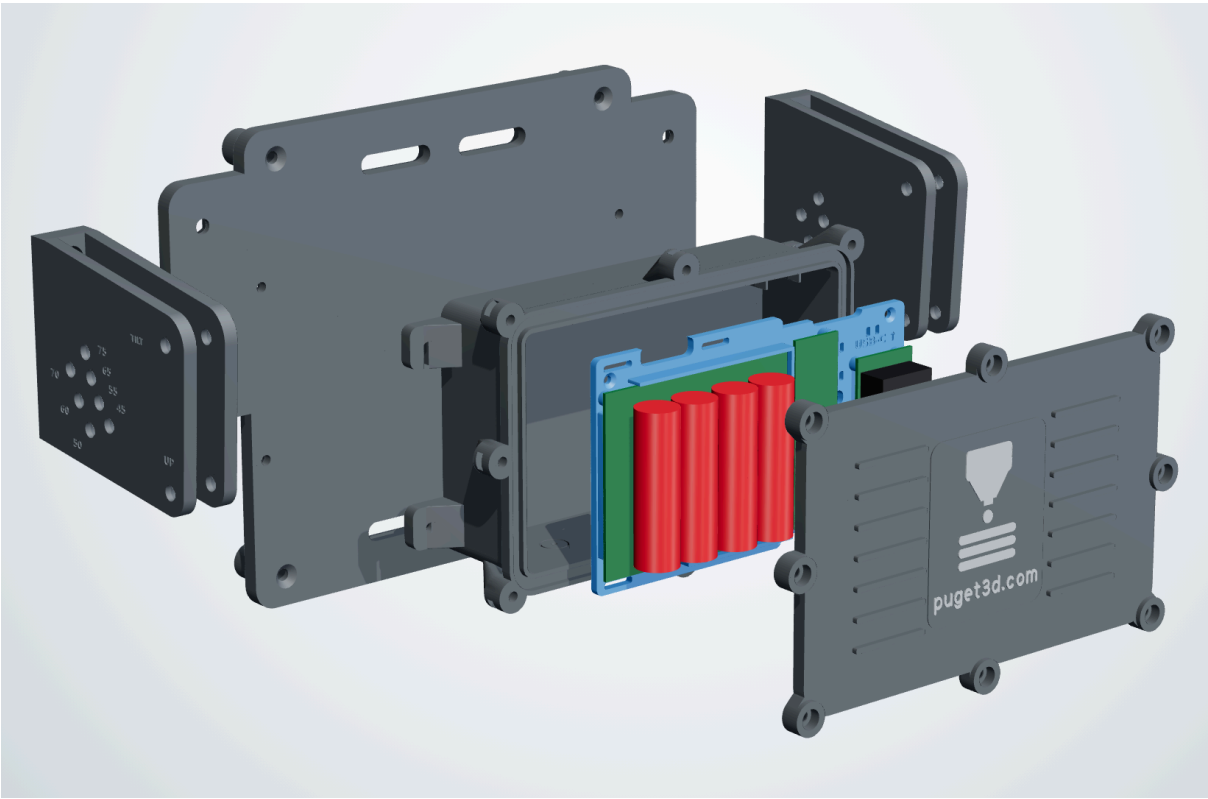
Part (version)	Qty	Material
Box SNE1-BOX v2.12	1	ASA
Lid SNE1-LID v2.11	1	ASA
Mount plate SNE1-MNT v2.8	1	ASA
Hinge yokes SNE1-YKL / YKR v2.8	1 + 1	ASA
Panel frame SNE1-FRM-P110 v2.11	1	ASA
Chassis plate SNE1-CP-MC v1.3 or SNE1-CP-GEN v1.2 (I1)	1	PETG

Tools: hex keys 2, 2.5, 3 and 5 mm · 10 mm spanner · #1 Phillips or 2 mm hex · flat screwdriver and small hammer · deburring tool or craft knife.
You supply: Voltaic P110 panel, N-female bulkhead pigtail and antenna, electronics and cells. Recommended: neutral-cure RTV, dielectric grease, self-amalgamating tape.

Product page, specs, drawings and the latest version of this guide: **puget3d.com/products/sne-1**

Hardware

Qty	Item	Where it goes
8 + 8	M4 × 16 socket head + M4 nut	Lid → box (nuts slide into the side slots of the box lobes)
4 + 4 + 4	M4 × 16 socket head + M4 nut + M4 washer	Box → mount plate (nuts in the plate-back pockets)
4 + 4	M6 × 16 socket head + M6 nut	Yokes → mount plate (nuts in the plate-back pockets)
4 + 4 + 8	M6 × 40 socket head + M6 nyloc + 2 washers each	2 hinge pivots + 2 tilt index pins
8 + 8 + 8	M3 × 12 + M3 nut + M3 nylon washer	Solar panel → frame (nylon washer against the panel)
4	M3 × 10 countersunk	Chassis plate → box inserts (**not longer than 10 mm**)
14	M2.5 × 8 pan head (MeshCore plate)	Boards and battery holder → plate standoffs
0.6 m	4 mm silicone foam cord	Lid groove
1 / 1 / 1	M12 × 1.5 vent · PG7 gland · desiccant	Bottom ports · inside the box
2 or 4	U-bolts (mast pack) or #10 × 2-1/2" flat-head screws (wall pack)	Mount plate → mast or wall



Exploded view: mount plate and yokes, box, chassis plate with electronics, lid.

1 · Prepare the box

1. **Test-fit.** Try an M4 nut in a lid-lobe slot and a plate pocket, and an M6 nut in a plate pocket. Drive one M2.5 screw into a chassis-plate standoff to feel the thread form.

2. **Open the knock-outs you need.** A typical node uses the **main N** (top right), **PG7** (bottom right) and the **vent** (bottom left). Leave the spares closed.
   - Work from the inside. Put a flat screwdriver in the centre dimple and give it one sharp tap outward with a small hammer.
   - Deburr the outside edge. The vent O-ring seals on that edge, so make it smooth.

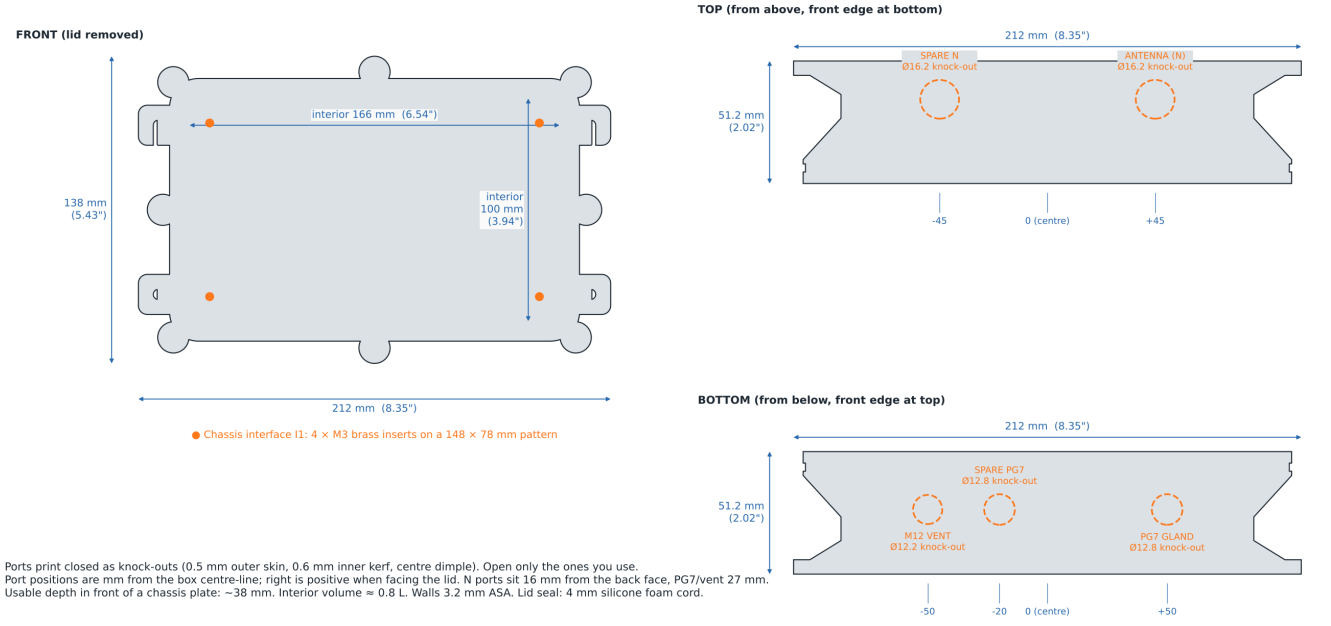
> Opened a port by mistake? Close it with a PG7 or N blanking plug, or a gland with a sealed blind insert.

3. **Fit the ports.**
   - N bulkhead through the top-right hole, nut inside.
   - PG7 gland bottom right, locknut inside. Thread the panel cable through before stripping it.
   - M12 vent bottom left: O-ring on the **outside**, nut inside, hand-tight plus 1/4 turn.

4. **Captive nuts.** Slide 8 × M4 nuts into the box lobe slots. Press 4 × M4 and 4 × M6 nuts into the pockets on the back of the mount plate. A drop of superglue keeps them in place.

SNE1-BOX v2.12 — box, interior and ports

Sealed ASA box with gasketed lid. Chassis plates mount on interface I1.



Ports print closed as knock-outs (0.5 mm outer skin, 0.6 mm inner kerf, centre dimple). Open only the ones you use.
Port positions are mm from the box centre-line; right is positive when facing the lid. N ports sit 16 mm from the back face, PG7/vent 27 mm.
Usable depth in front of a chassis plate: ~38 mm. Interior volume ≈ 0.8 L. Walls 3.2 mm ASA. Lid seal: 4 mm silicone foam cord.

Puget3D · puget3d.com · dimensions in mm (inches) · from the v2.12 CAD model

2 · Mount

5 **Yokes → plate.** Bolt the left and right hinge yokes to the plate's side wings with `4 × M6 × 16`, heads in the flange counterbores.

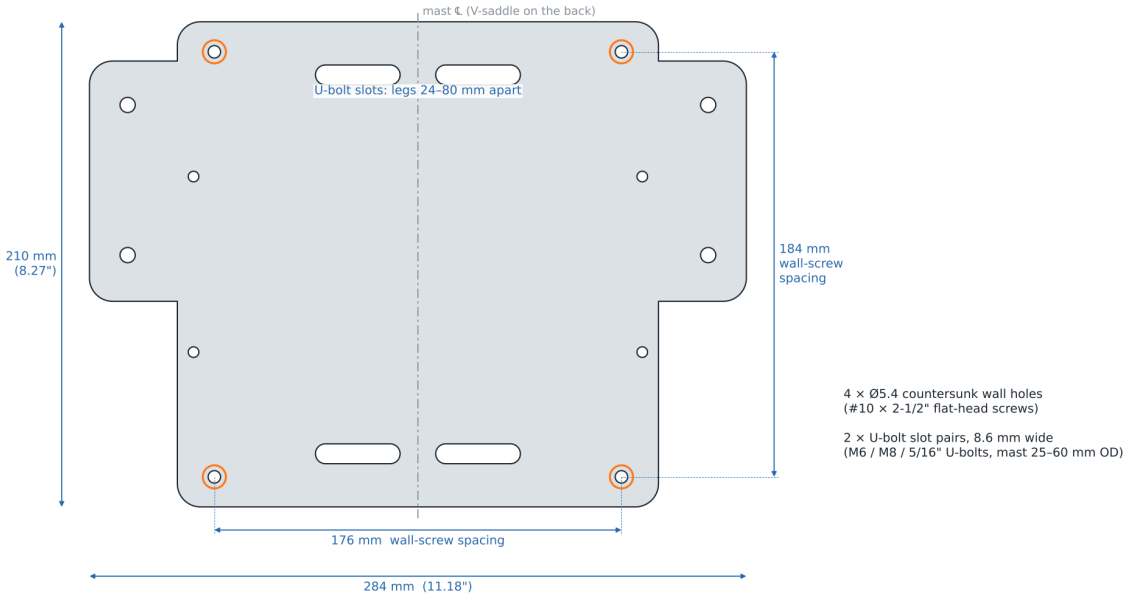
6 **Mount the plate.**

- *Mast:* V-saddle against the mast, 2 U-bolts through the top and bottom slot pairs. Aim the front **south** before tightening.
- *Wall:* 4 × #10 × 2-1/2" flat-head screws through the countersunk corners into framing (176 × 184 mm pattern).

7 **Hang the box.** Thread the 2 top `M4 × 16 + washer` into the plate, leaving about 4 mm. Drop the box's slotted top tabs onto them, fit the 2 bottom screws, and tighten all 4.

SNE1-MNT v2.8 — mount plate (wall or mast)

Front view. Box hangs on 2 slotted top tabs + 2 bottom tabs; hinge yokes bolt to the side wings.



Puget3D · puget3d.com · dimensions in mm (inches) · from the v2.12 CAD model

3 · Electronics (MeshCore plate)

8 **Boards on the plate (at the bench).** Screw the RAK19007 (4), bq24074 (4) and INA3221 (2) to their standoffs with `M2.5 × 8`. Drive slowly by hand and stop at snug.

9 **Wire and route.** Make your board connections and fit the LoRa and GPS pigtails. Feed the panel lead from the PG7 behind the plate through the bottom-right **PANEL** slot, and out of the centre-right hole.

10 **Plate → box.** Fit the plate to the 4 inserts with `4 × M3 × 10 countersunk`. Snug only: the inserts are strong, the plate isn't.

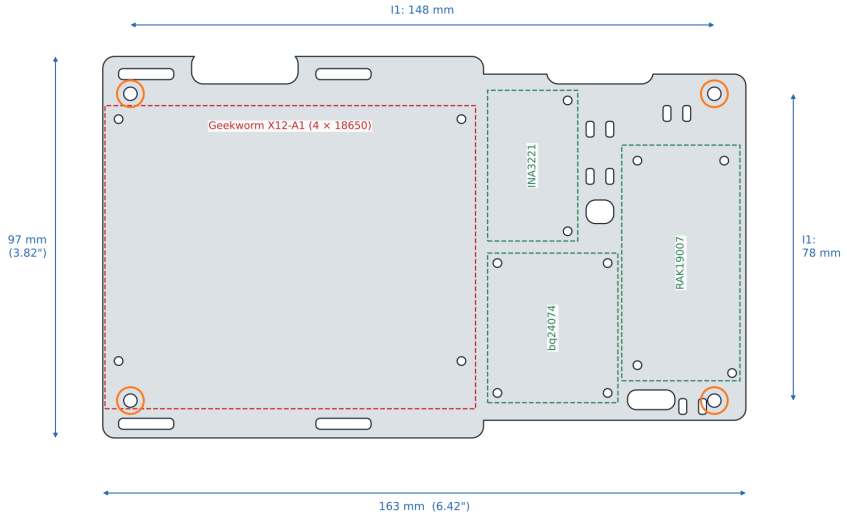
11 **Battery.** Drop the X12-A1 into the cradle with its outputs toward the boards. Fix it with `4 × M2.5 × 8` and/or cinch the two straps.

12 **Finish inside.** Connect the antenna pigtail to the N bulkhead. Press the GPS patch into the locator on the top wall, sky side up. Dress the cables with zip ties and add the desiccant.

Lithium cells: use protected or BMS-managed 18650s and a charger with temperature cut-off, and don't charge below 0 °C. Insulate any bare BMS board (e.g. with Kapton). Keep leads clear of the lid screws when closing.

SNE1-CP-MC v1.3 (I1) — MeshCore build chassis plate

Front view (component side). Orange: the 4 countersunk M3 holes of chassis interface I1.



Fits any SNE-1 box with interface I1. M2.5 self-threading standoffs (Ø2.2 pilots, 5 mm tall) for RAK19007, bq24074 and INA3221; Geekworm X12-A1 cradle with 4 M2.5 standoffs (86.9 × 61.5 mm) and 2 strap slots. 4 × M3 × 10 countersunk screws to the box.

Puget3D · puget3d.com · dimensions in mm (inches) · from the v2.12 CAD model

4 · Close and fit the panel

13. **Label (optional).** Stick a Brother DK-1209 label (62 × 29 mm) inside the outline on the lid's inner face.

14. **Seal.** Press the 4 mm cord into the lid groove, butting the ends at the bottom with a dab of neutral-cure RTV. Fit the lid with `8 × M4 × 16` in a cross pattern. Stop when the lid touches the rim; the groove sets the compression.

15. **Panel → frame.** Screw the P110 to the frame with `M3 × 12 + nylon washer + nut`, junction box toward the cable-gland side.

16. **Hang the panel.** Lift the frame so both tongues drop between the yoke cheeks. Fit both pivot bolts `M6 × 40 + 2 washers + nyloc`, nuts on the inner side.

17. **Set the tilt.** Swing the panel to the chosen angle and push the index pins through the matching numbered holes on **both** yokes. Route the panel cable to the PG7 with a drip loop and enough slack for the panel to flip UP.

About 47° N	Set to
Nov – Feb	70–75°
Mar – Apr, Sep – Oct	50°
May – Aug	45°
Set and forget	**65°**

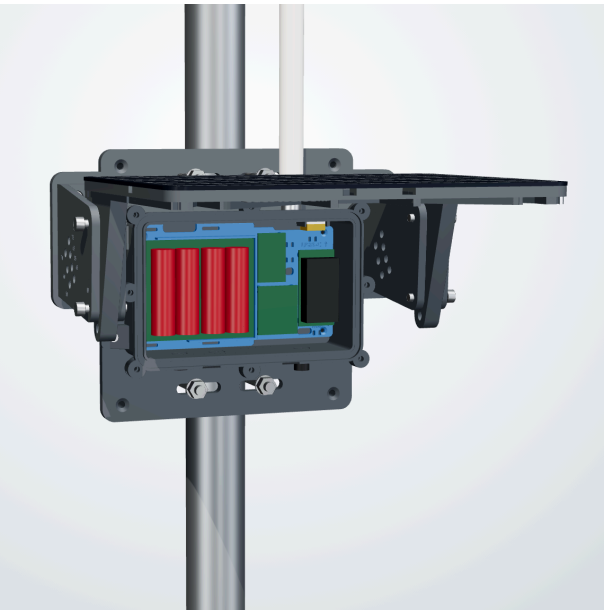
Service

Pull both index pins, swing the panel up to horizontal and pin it through the **UP** holes. All 8 lid screws are then reachable.

To lift the lid off the gasket, twist a flat screwdriver in one of the two 45° pry chamfers on the bottom edge, 32 mm either side of centre.

To remove the MeshCore plate: take the battery out first (it covers the two left plate screws), then undo the 4 plate screws.

Replace the desiccant whenever you open the box. Check the lid screws and pins after the first storm season.

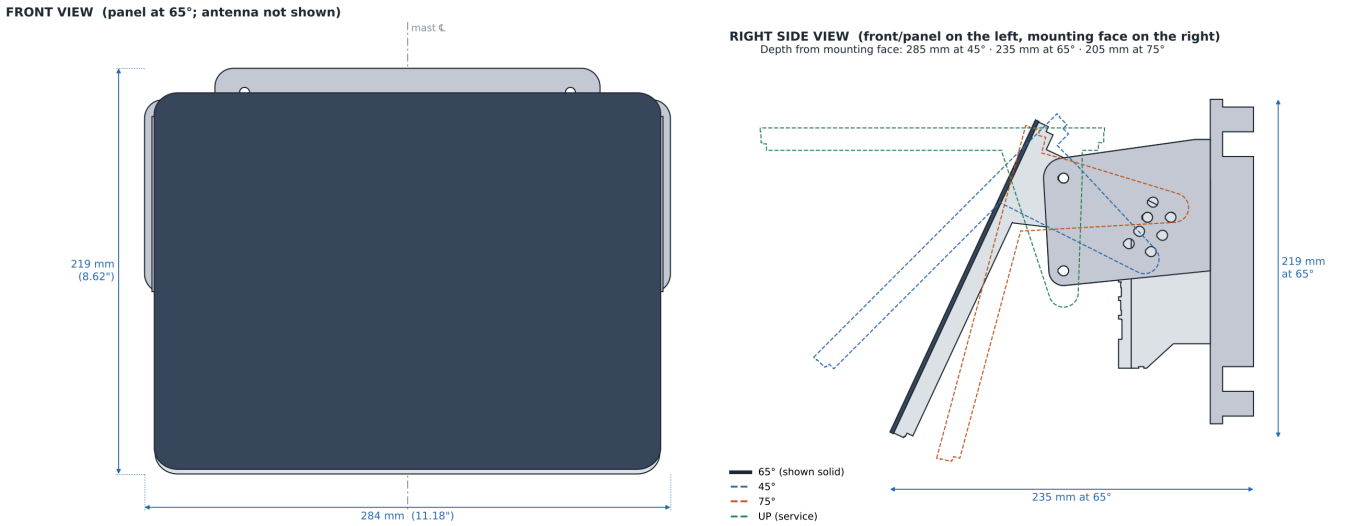


Panel in the UP service position, lid off.

Overall dimensions

SNE-1 Solar Node Enclosure v2.12 — overall dimensions

Assembled with mast mount and Voltaic P110 10 W panel (panel not included). Tilt 45–75° in 5° steps + UP service position.



SNE-1 v2.12 (I1) · Puget3D · puget3d.com · Not IP-tested or certified. Designed for outdoor use with the vent and gland facing down.