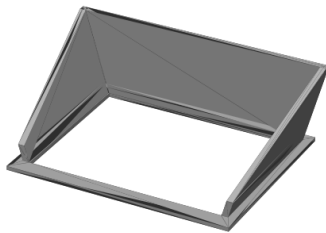


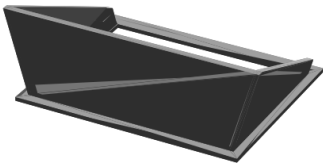
Uniden SDS200 Display Glare Shroud

3D-printed sun visor for face-up / vertical center-console mounting

Isometric - viewer (open) side



Isometric - far side



Document	Details
Revision	1.0 (October 24, 2026)
Prepared by	William A. Atkins
Kit contents	Production STL, fit-gauge STL, parametric OpenSCAD source, Python generator, renders, dimension drawing, print job sheet
Status	Design complete. Fit NOT yet verified on a physical radio. Display opening uses estimated dimensions.
Intended reader	Requester (measurement and installation) and print shop (production)

Before production

Measure the radio (Section 3) and print the 2 mm fit gauge first (Section 4.3). Do not print in PLA.

Contents

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2	Package contents and viewing the files
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1. Overview and how it works

When the SDS200 is mounted face-up in a center console, its 3.5-inch color display faces the roof. Light from roof glass, the sunroof and side windows washes out the screen. This shroud is a three-sided wedge-shaped hood that bonds to the bezel around the display only. It leaves the keypad, soft keys and control knob fully accessible.

Design principles

- **Tall far wall (45 mm)** on the side away from the viewer blocks the main overhead light path.
- **Tapered side walls** (45 mm down to 10 mm) block side-window light while staying low near the viewer.
- **12° outward flare** on each side wall keeps the off-axis viewing angle open, so the driver can read the screen from the seat.
- **Open near side** faces the viewer. An optional low lip can be added for stiffness.
- **Thin flange (6 x 2 mm)** bonds with tape to the bezel. Nothing is drilled into the radio.

Side profile (wedge)



2. Package contents and viewing the files

File	Purpose
README.md	Kit overview and quick start
SDS200_Glare_Shroud_Instructions.pdf	This document
PRINT_SPEC.txt	One-page job sheet for the print shop
CHANGELOG.txt	Revision history and open items
STL/sds200_glare_shroud_v1.0.stl	Production part at default (estimated) dimensions
STL/sds200_fit_gauge_v1.0.stl	2 mm flat fit-test frame. Print first.
STL/view_stl_in_openscad.scad	Opens the STL files in OpenSCAD for viewing
SOURCE/sds200_glare_shroud.scad	Parametric OpenSCAD source. Edit dimensions here.
SOURCE/generate_stl.py	Python STL generator; same parameters, no OpenSCAD needed
IMAGES/*.png	Dimension drawing and renders

2.1 Viewing the files with OpenSCAD

Every file in this kit can be viewed in **OpenSCAD**, a free 3D modelling program for Windows, macOS and Linux. Download version 2021.01 or newer from openscad.org. The same program is used to change dimensions (Section 4).

Parametric design (.scad)

1. Choose **File > Open** and select **SOURCE/sds200_glare_shroud.scad**.
2. Press **F5** to preview or **F6** for a full render.
3. Inspect with the mouse: left-drag rotates, right-drag pans, scroll zooms. **View > Reset View** recentres the model.
4. Optional: **Window > Customizer** shows the parameters as input boxes, so values can be changed without editing code.

Ready-made STL files

1. Choose **File > Open** and select **STL/view_stl_in_openscad.scad**. Keep it in the same folder as the STL files.
2. Press **F5**. Change show = "shroud" to "gauge" or "both" to see the other part.

The STL files also open in any slicer (PrusaSlicer, Bambu Studio, Cura, OrcaSlicer) and in the Windows 3D Viewer app.

3. Measuring the radio

Uniden publishes the chassis size (1.5x DIN-E, 180 mm x 75 mm) and the 3.5-inch display size, but not the display-window or bezel dimensions. Those must be measured. Use digital calipers and record each value to 0.5 mm.

Why this matters

The default opening (76 x 58 mm) is an estimate. If the real window is larger, the shroud will cover the edge of the screen. If the flange is wider than the flat bezel, it will press on buttons.

3.1 Measurements to take

1. **Visible display width (Dw)**: the lit screen area left-to-right, inside any bezel lip.
2. **Visible display height (Dh)**: the lit screen area top-to-bottom.
3. **Flat bezel land (L)**: the narrowest flat, uninterrupted distance from the display edge to the nearest button, label, knob or raised edge. Check all four sides and use the smallest.
4. **Overhead clearance (C)**: from the radio face up to the lowest object above it (armrest lid closed, console tray, arm position).
5. **Orientation**: which side of the display faces the driver, and where the strongest light comes from (roof glass, windshield, side window).
6. **Photos**: one straight-down photo of the radio face with a ruler in frame, and one photo from the driver's eye position.

3.2 Measurement record (send to print shop)

Item	Measured value	Model parameter	Formula
Visible display width (Dw)	_____ mm	win_w	Dw + 2 mm
Visible display height (Dh)	_____ mm	win_h	Dh + 2 mm
Flat bezel land (L)	_____ mm	flange	L minus 0.5 mm (max 8)
Overhead clearance (C)	_____ mm	h_far	C minus 5 mm (max 60)
Viewer / open side	Driver / Passenger / Rear	(orientation)	Note on install
Main glare source	Roof / Windshield / Side	(orientation)	Tall wall faces it

4. Customizing the model

4.1 Parameters

Parameter	Default	Range	Description
win_w	76 mm	40-120	Opening width. Visible display width + about 2 mm. ESTIMATE.
win_h	58 mm	30-100	Opening height. Visible display height + about 2 mm. ESTIMATE.
flange	6 mm	3-10	Bonding land around the opening. Must fit on flat bezel. ESTIMATE.
flange_t	2.0 mm	1.6-3	Flange thickness.
wall_t	2.4 mm	1.6-3.2	Wall thickness. Use multiples of nozzle width.
h_far	45 mm	20-60	Far-wall height. Taller blocks more overhead light.
h_near	10 mm	0-25	Side-wall height at the viewer end.
flare	12°	0-20	Outward lean of side walls. More = wider viewing angle.
near_lip	0 mm	0-6	Optional lip on the open side. 0 = fully open.
part	"shroud"	shroud / gauge	Select production part or 2 mm fit gauge.

4.2 Option A - OpenSCAD (recommended)

1. Install OpenSCAD 2021.01 or newer (free) from openscad.org.
2. Open **SOURCE/sds200_glare_shroud.scad**.
3. Edit the values under "MEASURE ON THE RADIO" using the Section 3.2 record.
4. Press **F5** to preview and **F6** to render.
5. Choose **File > Export > Export as STL**. Name it with the revision, for example sds200_glare_shroud_v1.0_custom.stl.

4.3 Fit gauge first

Set **part = "gauge"**, render and export. The gauge is the 2 mm flange only (about 5 g, 15-20 minutes). Lay it on the radio. The display must be fully visible through the opening and the flange must sit flat without touching any button. Adjust and repeat until it fits, then set **part = "shroud"** for production.

4.4 Option B - Python generator

For users without OpenSCAD. Requires Python 3.9+.

```
pip install trimesh manifold3d numpy
python SOURCE/generate_stl.py --win-w 78 --win-h 60 --flange 5 --out out
```

This writes both STLs to the out folder and reports whether each mesh is watertight. Keep the .scad and .py parameters in agreement if either is edited.

5. Print specification

Material warning

Do not use PLA or PLA+. Closed vehicle interiors in summer regularly exceed PLA's softening temperature and the part will sag or warp. ASA is preferred for heat and UV resistance.

Setting	Value	Notes
Material	ASA (preferred), ABS, PETG (minimum)	Matte black for lowest reflection
Orientation	Flange flat on bed, as modelled	No rotation needed
Supports	None	All overhangs are within printable angles
Nozzle	0.4 mm	
Layer height	0.20 mm	0.16 mm for a finer finish
Perimeters	6	Gives solid 2.4 mm walls
Top / bottom layers	5 / 5	
Infill	25% gyroid	Only the flange has infill area
Brim	5 mm	Recommended for ASA/ABS warp control
Seam	Aligned, far-wall outer face	Keeps seam out of view
Cooling	ASA/ABS 0-20%; PETG 40-60%	
Enclosure	Required for ASA/ABS	Prevents warping and layer splits

5.1 Typical temperatures

Material	Nozzle	Bed	Heat resistance
ASA	240-260 °C	90-110 °C	Best; also UV-stable
ABS	230-250 °C	95-110 °C	Good
PETG	230-250 °C	70-85 °C	Adequate; avoid dash-top use

Follow the filament manufacturer's recommended range where it differs.

5.2 Estimated material use (default dimensions)

Part	Envelope	Volume	Approx. mass
Shroud	100 x 70 x 45 mm	20.0 cm ³	25-30 g
Fit gauge	88 x 70 x 2 mm	3.5 cm ³	about 5 g

6. Quality inspection and post-processing

6.1 Inspection checklist

Check	Acceptance
Flange flatness	Flat within about 0.3 mm on a glass surface; no lifted corners
Opening size	Within ± 0.3 mm of win_w and win_h (calipers)
Wall joints	No layer splits or gaps at wall-to-flange joints
Inner surfaces	No stringing or blobs inside the hood
Finish	Matte, no glossy patches on inner faces

6.2 Post-processing

- Remove the brim and lightly deburr all edges.
- Optional: scuff inner faces with 400-grit for a flatter matte finish.
- Optional: line the inner walls with black flocking paper (self-adhesive) for maximum glare reduction.
- Do not paint or coat the underside of the flange; it is the bonding surface.
- Pack so the tall wall cannot be crushed in shipping.

7. Installation

7.1 Materials

- **Permanent:** 3M VHB tape, 0.6-1.1 mm thick, cut to flange width.
- **Removable:** thin 3M Dual Lock (low-profile) or 3M Command strips.
- Isopropyl alcohol (70-99%) and a lint-free cloth.
- Optional: black flocking paper for inner walls.

7.2 Procedure

1. Power the radio on and note how the screen reads from the driver's seat.
2. Clean the bezel around the display with isopropyl alcohol and let it dry. Clean the flange underside the same way.
3. **Dry-fit** the shroud. Point the tall wall toward the strongest light (usually overhead roof glass) and the open side toward the driver. Rotate 90° or 180° if the console layout requires it.
4. Confirm the whole display is visible, no button or knob is covered, and the console lid and shifter clear the shroud.
5. Apply tape to the flange underside. Keep tape at least 1 mm back from the inner opening edge so it never touches the screen.
6. Align carefully, press firmly around the whole flange for 30 seconds.
7. For VHB, allow 24 hours to reach full bond strength before exposing it to heat. Ideal application temperature is roughly 21-38 °C (70-100 °F).
8. Check readability on a bright midday drive. If glare persists, see Section 8.

7.3 Removal

Warm the flange with a hair dryer on low, then slide fishing line or dental floss under the flange to cut through the tape. Remove residue with isopropyl alcohol or an adhesive remover safe for plastics. Do not pry against the screen.

8. Troubleshooting and tuning

Symptom	Likely cause	Fix
Glare still hits screen from above	Far wall too short, or tall wall faces the wrong way	Increase h_far, or rotate the shroud toward the light source
Glare from a side window	Side walls too low at viewer end	Increase h_near (10 to 15-20 mm)
Driver can't see the whole screen	Walls too close or upright	Increase flare (12 to 15-18°) or reduce h_near
Screen edge hidden	Opening too small	Increase win_w / win_h; re-measure visible area
Flange touches buttons	Flange too wide	Reduce flange; check bezel land
Hits console lid or armrest	Too tall	Reduce h_far to clearance minus 5 mm
Part warped or sagged in heat	PLA used, or PETG in direct sun	Reprint in ASA
Reflections off inner walls	Glossy finish	Matte filament, scuff, or flocking paper
Tape lets go	Poor surface prep, cold install	Re-clean with IPA; install warm; allow 24 h cure

Additional options: a matte anti-glare screen protector sized for a 3.5-inch display, and raising the radio's backlight setting, both help further. Confirm the available display settings in the Uniden SDS200 owner's manual.

9. Safety, limitations and revision history

9.1 Safety

- Keep the shroud and radio clear of any airbag deployment path.
- Confirm the part does not interfere with the shifter, console lid, cupholders or occupant knees.
- Do not let the radio or shroud distract the driver. Make adjustments while parked.
- Use edges that are deburred and free of sharp corners.

9.2 Known limitations

- Display-window and bezel dimensions are estimates. Fit has not been verified on a physical SDS200.
- Production STLs were generated by the included Python script that mirrors the OpenSCAD source. Both meshes were confirmed watertight (closed, manifold) after export and re-import. The OpenSCAD file was not rendered when these STLs were made; render it once to confirm it matches if you edit it.
- Bond strength depends on the bezel surface finish and tape; test before relying on it in rough driving.

9.3 Revision history

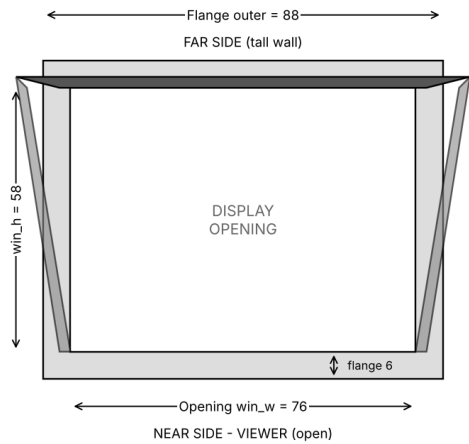
Rev	Date	Changes
1.0	2026-10-24	Initial release. Wedge hood, bonding flange, fit gauge, parametric source and Python generator. Fit not yet verified.

9.4 Sources

Uniden SDS200 published specifications (3.5-inch color display; 1.5x DIN-E 180 x 75 mm chassis), as listed by Walcott Radio (walcottradio.com/uniden-sds200-p-3190.html) and Home Depot (homedepot.com, Uniden SDS200 listing). Material, print-temperature and tape guidance is general industry practice; follow each manufacturer's data sheet.

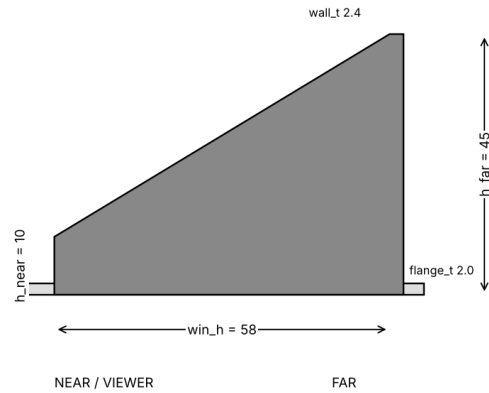
Appendix A - Dimension drawing

SDS200 Glare Shroud v1.0 - default dimensions (mm). Display values are ESTIMATES - measure before production.
Top view (looking down on radio face)



Side profile (side wall)

Side walls flare outward 12° each



All dimensions in millimetres at default parameters. Display opening and flange values are estimates.

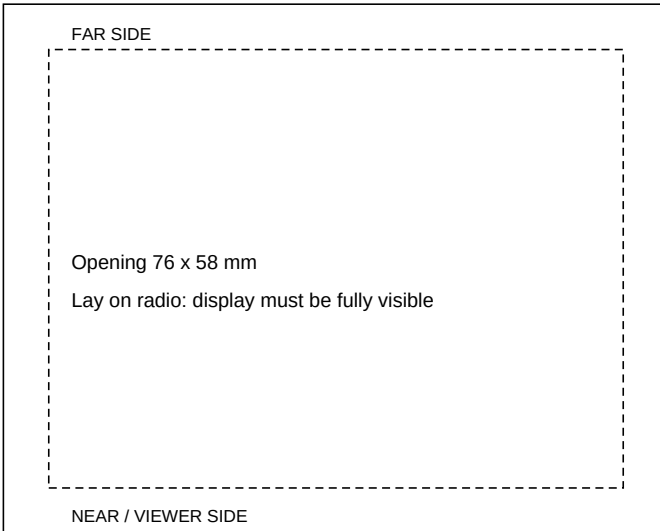
Appendix B - 1:1 cardboard mockup template

Print this page at **100% / Actual size** (no "fit to page"). Check the 50 mm scale bar with a ruler. Cut the pieces from thin card, tape the walls to the flange, and test on the radio during a bright drive before printing. Adjust parameters from what you learn.

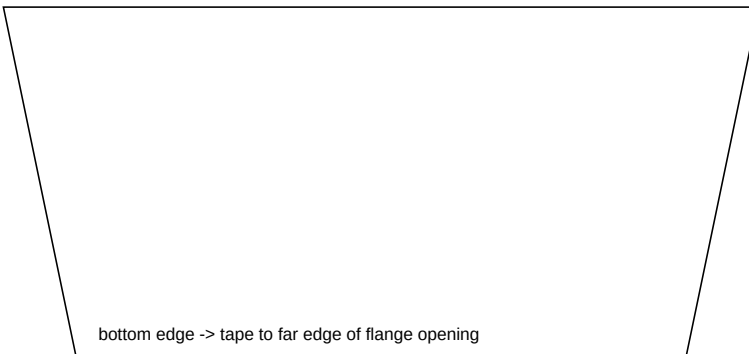


SCALE CHECK: this bar must measure exactly 50 mm. Print at 100% / "Actual size".

A - FLANGE / FIT TEMPLATE (cut outer solid line; cut out dashed opening)



B - FAR WALL x1 (bottom 80.8, top 99.9, height 46.0 mm)



C - SIDE WALL x2 (base 60.4, near 10.2, far 46.0 mm)

