TOPBYTES LTD
Product brochure · topbytes.net/sattracker

DESIGNED AND BUILT IN BRITAIN

SatTracker

A 7-inch amateur-satellite tracker for the shack

When is the next good pass, where do I point the antenna, and what frequency do I use right now? SatTracker answers all three on a live world map, with passes predicted on the device and Doppler-corrected frequencies during the pass. A complete, ready-to-use unit on the same 7-inch platform as DX Spotter Pro, FlightRadar and MeshDisplay, with free over-the-air updates.



SatTracker (NEON theme) on the TopBytes 7-inch unit. Photo of a production unit running the current firmware.

When

24 hours of passes for up to 12 satellites, with alerts before the good ones

Where

Live azimuth and elevation, a sky plot of the pass and the footprint on the map

What frequency

Uplink and downlink for 33 satellites, Doppler-corrected while overhead

SatTracker contains no amateur-band radio: it predicts and displays; you use your own station.

AT A GLANCE

Satellite operating, made simple

Working amateur satellites is one of the most rewarding parts of the hobby, and one of the easiest to get wrong. Passes last ten or fifteen minutes, the frequency moves with Doppler shift, and the usual tools are a laptop program or a phone app that have to be opened, set up and checked at the right moment. It is easy to miss the pass while getting set up.

SatTracker is a complete 7-inch touchscreen unit, supplied ready to use, that sits on the desk and does the work: it tracks the satellites you choose, predicts every pass over your location, warns you before a good one and shows exactly where to point and what to tune to. It needs only Wi-Fi and USB-C power. No computer, no app, no account.

What you see

- Every tracked satellite on a live world map
- A 12-hour timeline of upcoming passes
- Where to point the antenna and what to tune to
- An alert before a good pass, so you never miss one

Easy to own

- Works with the radio and antenna you already own
- No computer, app or account: set up on the touchscreen
- Predictions keep running through an internet outage
- Free over-the-air updates keep it current

Make it yours

- Two themes: NEON and OPS
- Choose up to 12 satellites to track
- Alert lead time from 2 to 30 minutes
- Night mode for the screen overnight

12	33	24 h	1.3 s
satellites tracked at once	with frequency data	of passes ahead	worst pass-time error

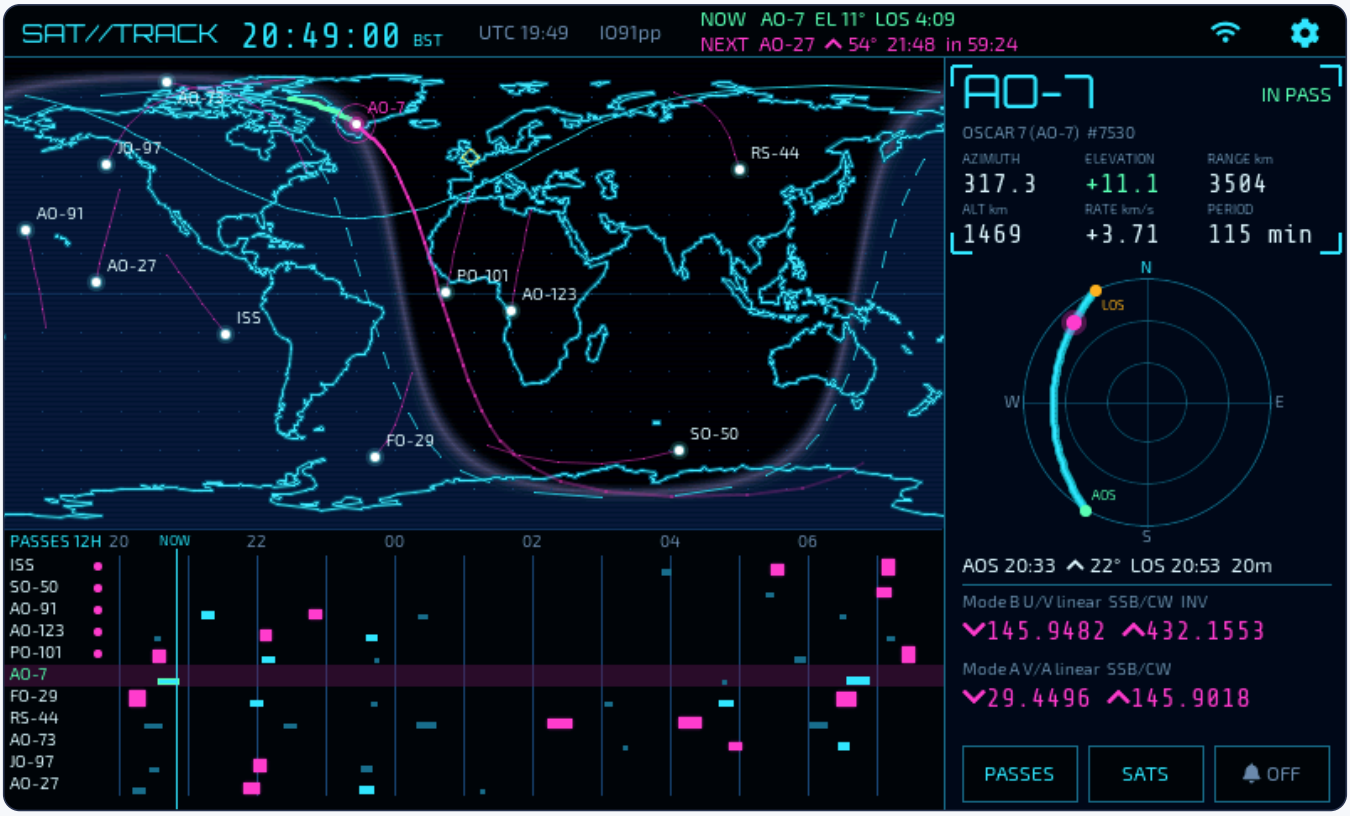
ALWAYS IMPROVING

- Current firmware (version 1.1): map, pass prediction, Doppler-corrected frequencies, alerts, two themes, night mode and over-the-air updates.
- Accuracy checked against the Skyfield reference library: 75 passes of 11 satellites all matched, worst error 1.3 seconds in time and 0.05° in maximum elevation.
- Full user manual online at topbytes.net/sattracker, with screenshots taken from the unit.

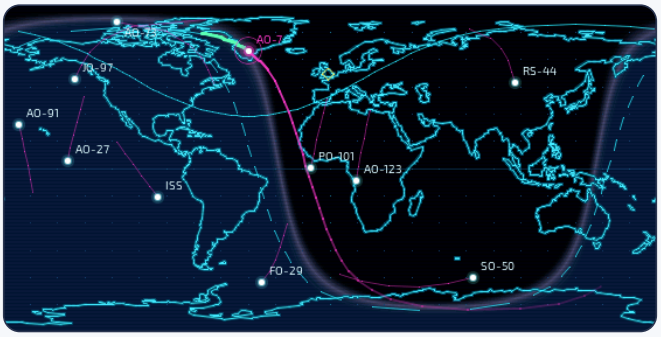
WHAT IT DOES

Everything overhead, on one screen

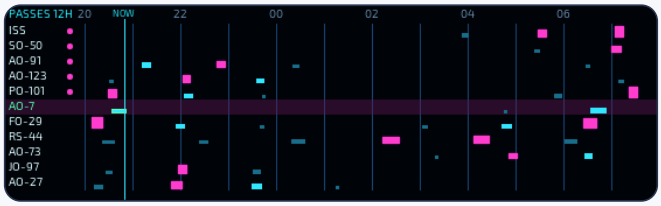
The main screen has the whole picture at once: a world map of the satellites being tracked, a 12-hour timeline of their passes underneath, and full details of the selected satellite on the right. It updates once a second; tap any satellite or timeline row to select it.



The main screen (NEON theme) while AO-7 is making a pass. Daylight is over the Americas, night over Europe and Africa, with the grey line between.



Map: the selected satellite's footprint, recent and future track, and its next pass over your home in green, tagged with the AOS time.



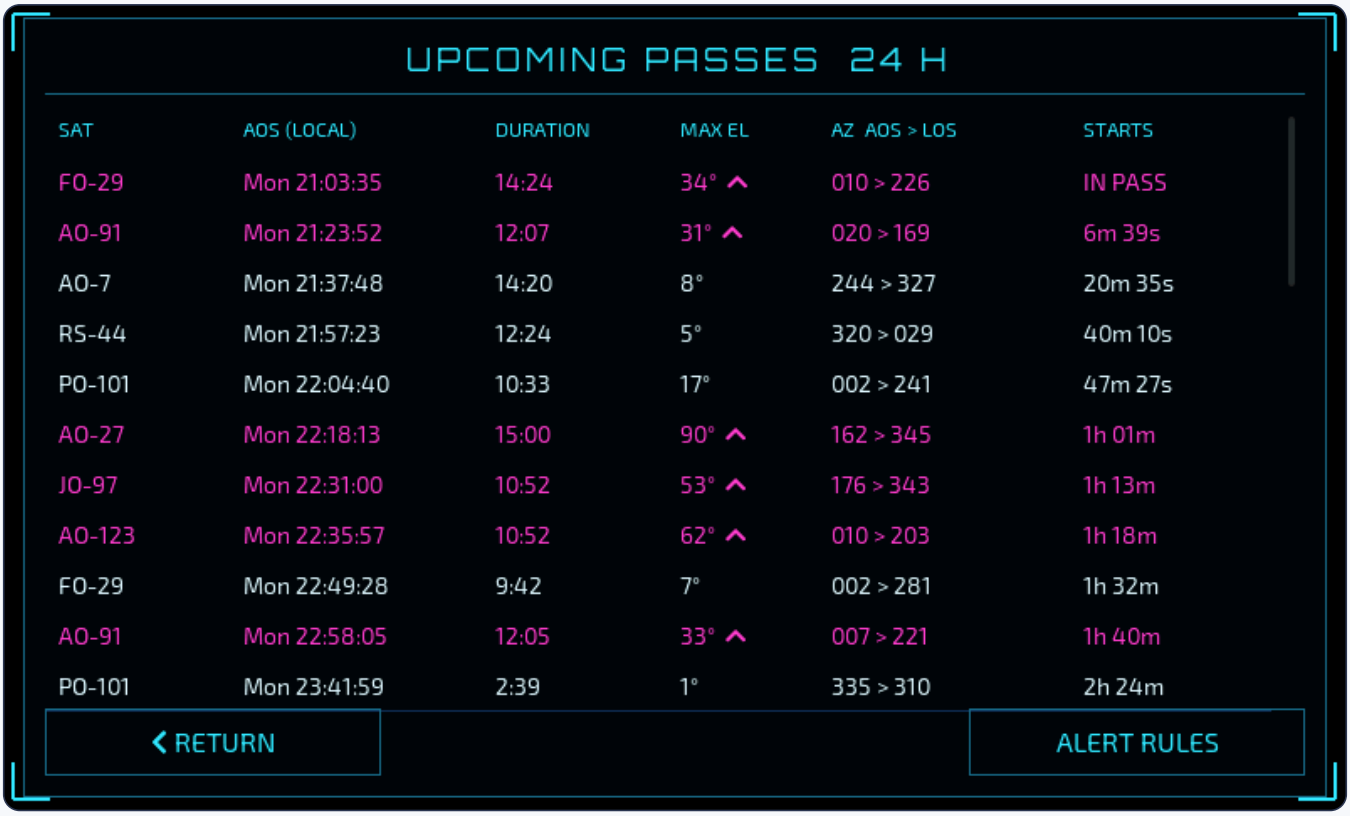
Timeline: one row per satellite, one hour back and eleven ahead. Taller, brighter bars are higher passes.

- World map with coastlines, a live day/night terminator and grey line
- Up to 12 satellites tracked at once, each with its name and a short trail
- Top bar: what is up now (with time to LOS) and the next good pass with a countdown
- Local time and UTC side by side, plus your Maidenhead locator
- Geostationary QO-100 shown with its fixed azimuth and elevation
- Clock set automatically over the internet; 18 time zones with daylight saving

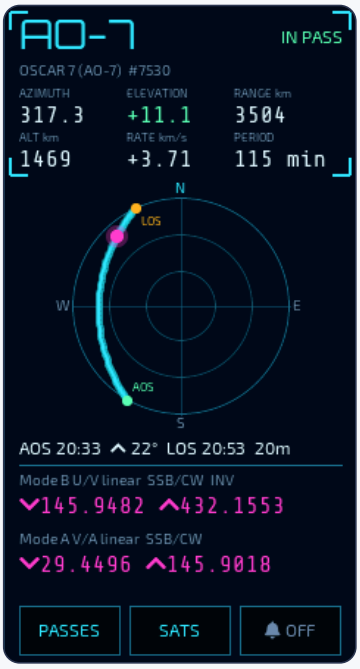
PASS PREDICTION

Know when, and where to point

SatTracker runs the same SGP4/SDP4 orbit model as the professional tools, on the unit itself. It needs no internet service to predict: once a day it downloads fresh orbital data from CelesTrak, keeps it in flash, and works out every pass over your location for the next 24 hours.



Upcoming passes for all tracked satellites, in time order. Good passes (above your chosen elevation) are highlighted. Tap a row to select the satellite.



Detail panel (NEON theme).

The detail panel

Everything about the selected satellite, live:

- Azimuth and elevation: where to point the antenna now, in green while it is up
- Range, altitude and range rate: how far away it is and how fast it is closing
- Sky plot: the pass drawn across the sky from AOS to LOS, with a dot showing where the satellite is right now during the pass
- Pass summary: AOS time, maximum elevation, LOS time and duration
- Frequencies: uplink and downlink, Doppler-corrected while overhead (next page)

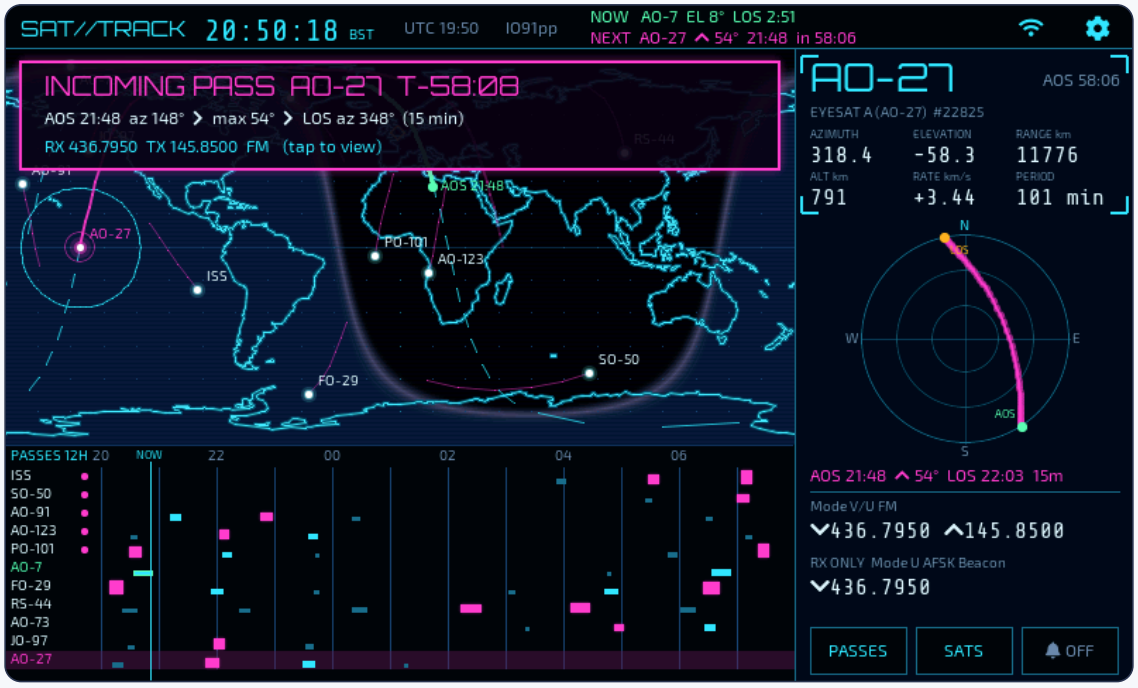
Accurate

Checked against the Skyfield reference library using the unit's own orbital data: 75 passes of 11 satellites, worst error 1.3 s in AOS/LOS time and 0.05° in maximum elevation. Passes are recalculated every 15 minutes and whenever the data, location or settings change.

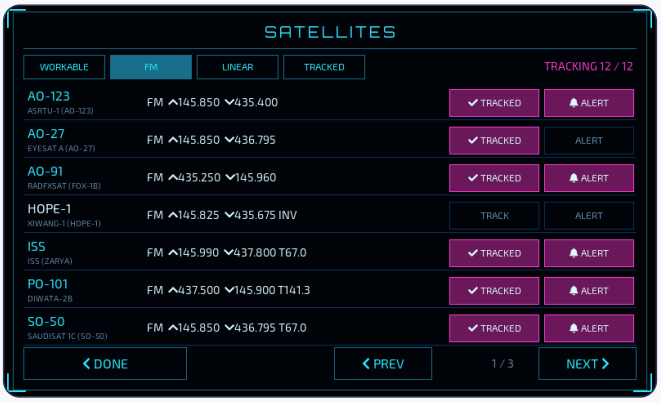
FREQUENCIES, DOPPLER AND ALERTS

Never miss a good pass again

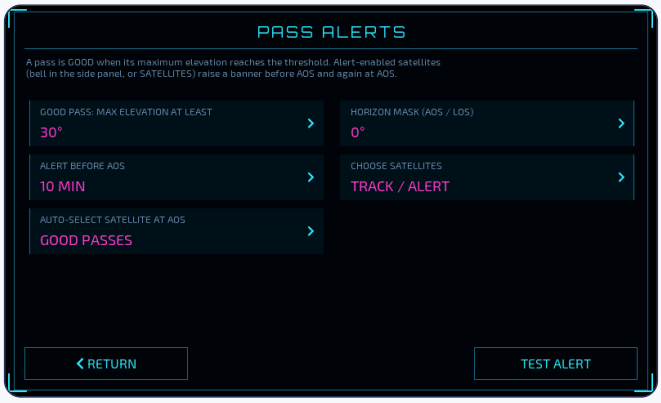
SatTracker warns you before each good pass of the satellites you care about, with the frequencies already on screen, and during the pass it shows the Doppler-corrected frequency to listen and transmit on, second by second.



INCOMING PASS alert for a 54° pass of AO-27, with countdown, AOS and LOS azimuths, duration and the receive and transmit frequencies. A second alert follows at AOS.



Satellite picker, filtered to FM satellites: TRACK adds a satellite, ALERT turns its pass alerts on.



Alert rules: what counts as a good pass, how much warning, horizon mask and auto-select at AOS.

Frequencies and Doppler

- Uplink, downlink, mode, CTCSS tone and inverting/non-inverting transponder for 33 workable satellites (FM, linear and data)
- During a pass: the downlink shows where the signal actually arrives, the uplink where to transmit so the satellite hears its nominal frequency
- About ±10 kHz of shift at 435 MHz: enough to miss an FM contact

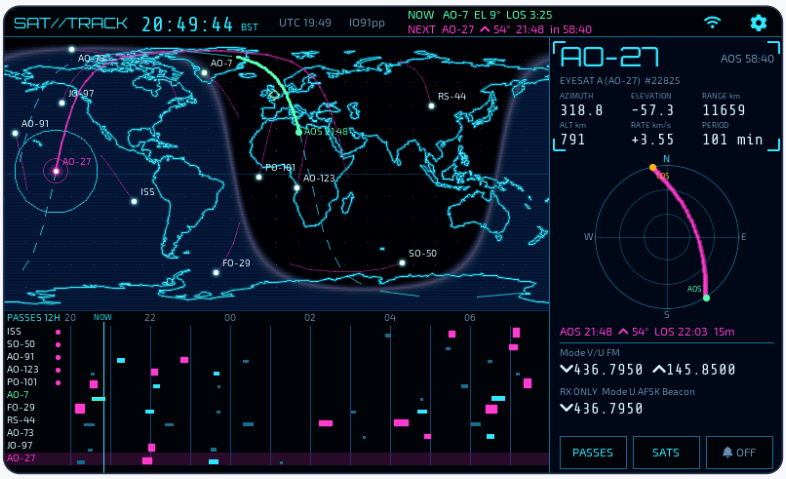
Alerts

- Good pass set by maximum elevation (10° to 60°); warning 2 to 30 minutes before AOS
- Alerts wake the screen from night mode, so the unit can sleep overnight
- Optional auto-select: the map and panel switch to each satellite as it rises

TWO LOOKS, ONE PRODUCT

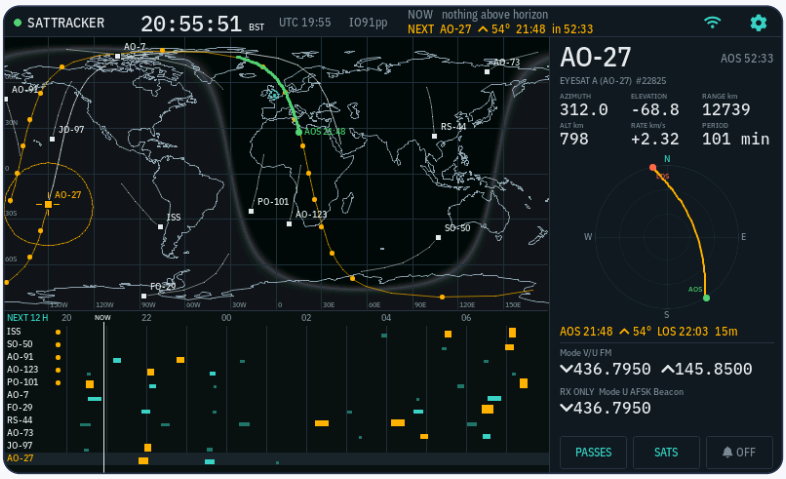
A display you will want on your desk

SatTracker ships with two complete visual themes, chosen in Settings. Each has its own colours, typefaces and map style, so it suits a gadget-lover's shack or a tidy operating position. Pick the one you like and change it whenever you want.



NEON

A futuristic holographic display: deep-space background, cyan and magenta neon, glowing coastlines and comet-tail trails. Orbitron and Exo 2 typefaces.



OPS

A mission-control console: charcoal panels, crisp white and amber, a labelled latitude and longitude grid and five-minute ticks along the satellite's track.



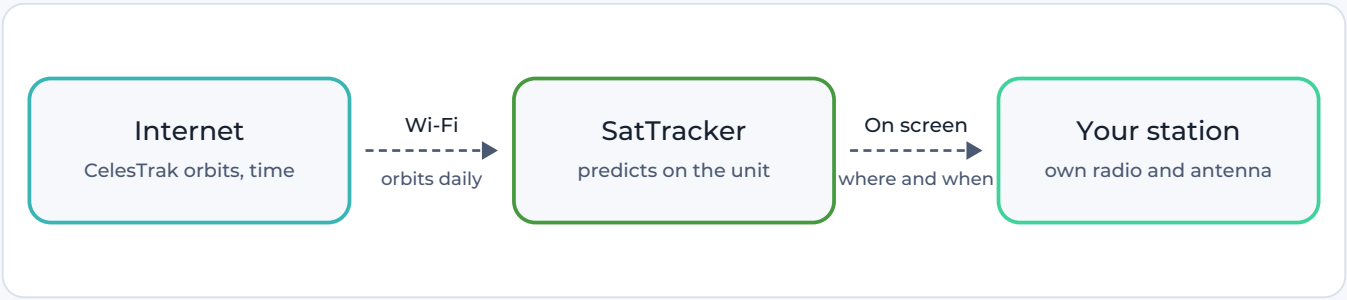
On the desk

The production unit on its desk stand, running the OPS theme. The screen can be rotated 180° for upside-down mounting, and a night-mode schedule turns it off overnight.

All fonts are open-licensed (SIL OFL). Coastlines from Natural Earth (public domain).

SETUP AND HOW IT WORKS

Out of the box in a few minutes



1 Power it up

USB-C, the same supply as our other 7-inch products.

2 Join Wi-Fi

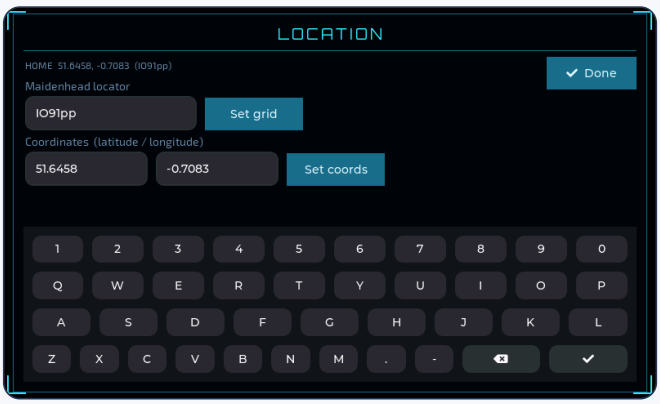
On the touchscreen or from a phone. Wi-Fi saved by DX Spotter Pro or FlightRadar is reused automatically.

3 Set the location

Type a Maidenhead locator (e.g. IO91pp) or latitude and longitude.

4 Done

Passes appear within seconds. Choose satellites and alerts whenever you like.



Home location by grid square or coordinates.



Every setting is on the touchscreen (OPS theme).

KEEPS WORKING OFFLINE

Orbital data is cached in flash and refreshed daily, so predictions carry on for several days without internet; the clock only needs setting once after power-up. Out of the box SatTracker already tracks the ISS, SO-50, AO-91, AO-123 and PO-101 (with alerts), plus AO-7, FO-29, RS-44, AO-73, JO-97 and QO-100, so a newcomer sees useful passes straight away.

WHO IT'S FOR

From first FM contact to QO-100

SatTracker doesn't replace your radio or antenna: it makes them easier to use for satellite work, whether you are hearing your first FM pass or running a linear transponder station.

FM satellite newcomers

A dual-band handheld and a hand-held Yagi: SatTracker tells them which of SO-50, AO-91, AO-123, PO-101 and the ISS pass high today, and what to tune to.

Linear transponder operators

RS-44, FO-29, AO-7 and JO-97: the passband, the inverting transponder flag and the Doppler-corrected centre, live through the pass.

QO-100 stations

The geostationary satellite's azimuth and elevation from your location, alongside the rest of the tracked satellites.

Clubs, schools and events

An always-on display of what is overhead for a club shack, classroom or open day.

PART OF THE TOPBYTES 7-INCH FAMILY



The production 7-inch unit running SatTracker (OPS theme).

SatTracker is built on the same 7-inch screen and enclosure as DX Spotter Pro, FlightRadar and MeshDisplay and, like them, is sold as a complete unit with its firmware pre-installed. That means:

- the same USB-C power and the same simple setup
- free over-the-air firmware updates, like the rest of the range
- online manuals and web-flasher recovery tools for every product

GOES WELL WITH

- DX Spotter Pro: live DX cluster spots, propagation and DX alerts on the same 7-inch screen.
- FlightRadar: a radar scope of the aircraft overhead, with type, route and a photo.
- MeshDisplay: your Meshtastic radio's messages, nodes and map, without the phone.

SPECIFICATION

Product details

Display	7-inch IPS, 800 × 480, capacitive touch, brightness control, night-mode schedule
Processor	ESP32-S3 dual-core 240 MHz, 16 MB flash, 8 MB PSRAM
Orbit model	SGP4 / SDP4 (near-earth and deep-space), calculated on the unit
Satellites	About 95 in the catalogue (CelesTrak amateur group); 33 with frequency data; up to 12 tracked at once
Predictions	24 hours ahead; within about 1 s and 0.05° of the reference implementation
Frequencies	Uplink, downlink, mode, CTCSS and transponder type; live Doppler correction
Alerts	On-screen banner before AOS (2 to 30 min) and at AOS; wakes the screen
Wi-Fi	2.4 GHz, up to 3 networks; orbital data, clock and updates (no radio inside)
Power	5 V USB-C, 2 to 4 W typical
Themes	NEON and OPS; 18 time zones with automatic daylight saving
Supplied as	Complete unit: 7-inch screen in the TopBytes enclosure with SatTracker firmware pre-installed, plus USB-C cable. Plug in, join Wi-Fi, set the location.
Updates	Free over-the-air (Wi-Fi) firmware updates for new versions, as across the range

IN THE BOX

- SatTracker unit, firmware installed and ready to go
- USB-C power cable

HELP AND SUPPORT

- User manual, release notes and recovery tools at topbytes.net/sattracker
- Email support@topbytes.net

Pricing and availability: Martin Lynch & Sons (ML&S)

TopBytes products are sold exclusively through Martin Lynch & Sons Ltd. For current prices and stock, visit hamradio.co.uk/topbytes.

Screenshots are captured directly from the unit's display. Orbital data from CelesTrak; transmitter data from TopBytes' curated list and SatNOGS DB. These are independent sources not affiliated with TopBytes Ltd.