

ENVIRONMENT SERVICE FOR THE MUXEN BRAIN

SEXTANT

The sun, the moon, the tide and the night sky, computed for where the boat is and shown on every screen.

Sextant is the environment service of the MUXEN Brain. It takes the boat’s **GPS position and the time**, and works out what the sun and moon are doing overhead, how far the compass needle sits from true north, what the tide is doing at the ports nearby, and which stars are above the horizon.

FIVE ENVIRONMENT REPORTS ON EVERY SCREEN

01 SUNRISE, SUNSET AND DUSK

Rise, set and solar noon for today, with the three **twilight windows** — civil, nautical and astronomical — and where the sun is in the sky right now.

04 TIDE AT THE PORTS NEARBY

Every port within **50 nautical miles**, nearest first: the level now, the next high and low water, the tidal coefficient and a **36-hour curve** to plot.

02 MOON PHASE AND MOONRISE

Moonrise, moonset, the phase across the whole cycle and the fraction of the disc that is lit, so a screen draws the **right crescent** the right way round.

05 THE NIGHT SKY OVERHEAD

The stars above the horizon with their bearing and altitude, the constellation figures joined up, and the **seven planets** — a planisphere for the watch.

03 MAGNETIC VARIATION

How far magnetic north lies from true north at this position today — the **variation** a chart plotter and a hand-bearing compass both need.

KEY SPECIFICATIONS

Inputs	GPS position and time from the boat’s NMEA-2000 network
Reports	Sun, moon, magnetic variation, tides and night sky
Refresh	Every 15 minutes, or sooner when the boat has moved far
Tide stations	8117 ports worldwide; every one within 50 nautical miles
Star catalogue	1663 stars, 88 constellations and 7 planets, built in

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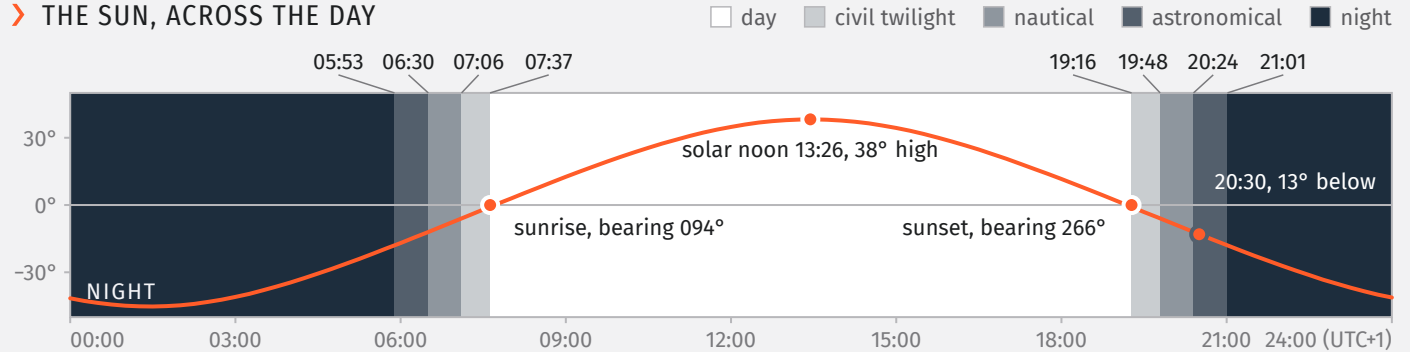
THE REPORTS, DRAWN

ONE EVENING OFF BREST

Sextant publishes numbers; a screen draws them. Here is one evening as four of the reports describe it, for a boat lying **two miles off Brest**.

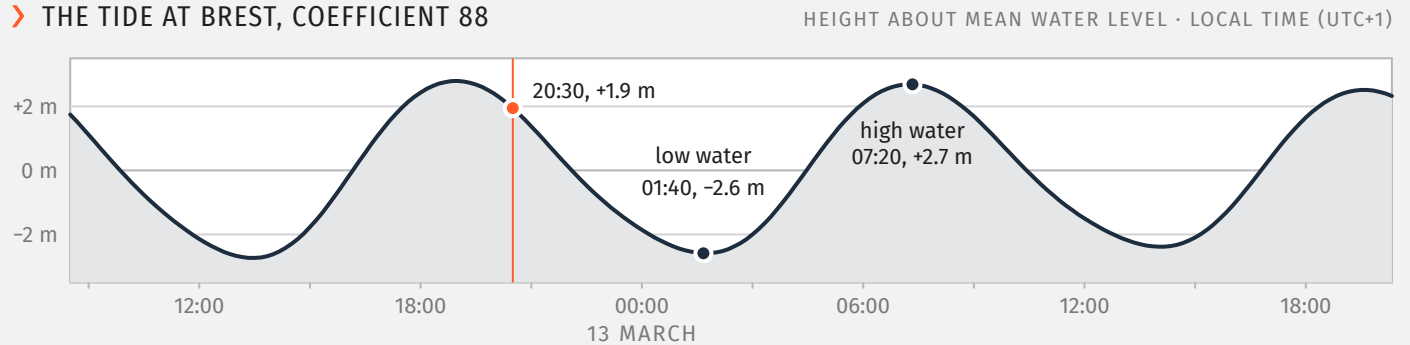
FIGURES COMPUTED BY SEXTANT FOR 48°21'N 4°31'W, 12 MARCH 2027, 20:30 LOCAL TIME (UTC+1)

> THE SUN, ACROSS THE DAY



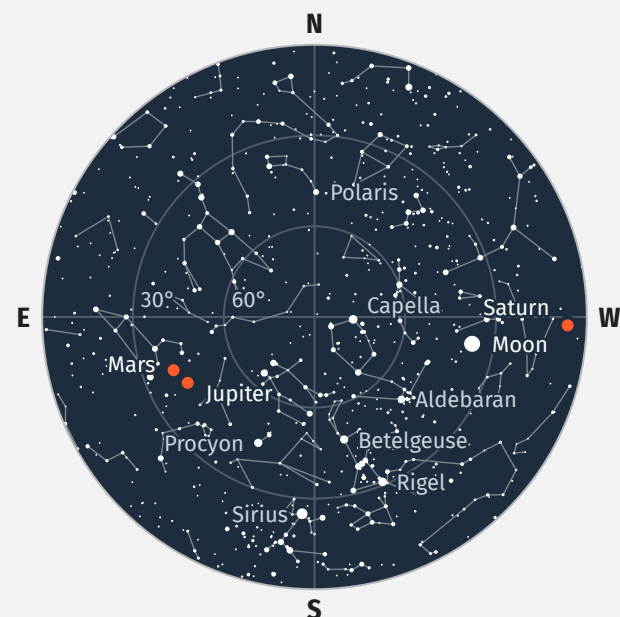
When it gets light and when it gets dark. The **sun report** carries rise and set with their bearings, solar noon and how high the sun stands then, the start and end of each of the three twilights, and where the sun is at every refresh.

> THE TIDE AT BREST, COEFFICIENT 88



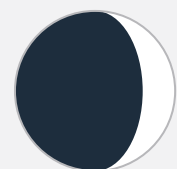
The port the boat is heading for, not only the nearest: the **tides report** lists all 50 ports within 50 nautical miles, each with its level now, the next high and low water, its coefficient and this curve, twelve hours back and a day ahead.

> THE SKY AT 20:30



Every star brighter than magnitude 5 that is above the horizon, by bearing and altitude, with the constellation figures joined up and the planets. The **sky map report** puts 794 stars on this dome and three planets a crew can see: Mars, Jupiter and Saturn. It is the sky seen from below, so east is on the left.

> THE MOON



Waxing crescent
 20% lit, 4.4 days old
 37° up, bearing 260°
 Sets 00:36, rises 09:13
 Full moon in 9 days

The **moon report** gives the phase across the whole cycle and the fraction of the disc that is lit, so a screen draws the crescent the right way round, with moonrise, moonset and the days to the next new and full moon.