# EssentialSail NMEA

## User Manual

**Version 1.61 (build 61)** · Updated 18 November 2026
Support: support@essentialsail.com · Online guide and support: https://essentialsail.com/guide#support

> **Safety notice.** EssentialSail NMEA is a supplementary aid. It does not replace certified navigation equipment, a proper lookout, or good seamanship. GPS accuracy, wireless links and phone hardware can all fail. The Anchor Watch in particular must never be your only safeguard: check your anchor visually and set a conservative radius.

## 1. What the app does

EssentialSail NMEA turns a phone, tablet or head unit into a boat instrument display. It connects over Wi-Fi to your boat's NMEA gateway and shows:

| Screen | What you get |
|---|---|
| **EssentialView** (1 to 5 pages) | Pages you arrange yourself: the Wind & sails gauge, big-number data tiles, and the instruments — wind, depth, speed, compass, AIS radar, anchor, camera, maneuver — as widgets; a red **MOB** button sits next to Widgets |
| **EssentialAIS** | AIS radar: nearby vessels, collision warnings (CPA/TCPA and CBDR), alarms |
| **EssentialAnchor** | Anchor watch: drop the anchor, set a swing radius, get an alarm if you drag |
| **EssentialLogBook** | Digital ship's log: track every minute, a line every hour, your own entries, export (see section 8) |
| **EssentialCAM** | Live RTSP/ONVIF video from a camera on board |
| **NMEA** | The raw sentences arriving from your instruments (for troubleshooting) |

The app is available in **English, French, Italian, Spanish, German, Portuguese and Dutch**.

## 2. Before you start

You need:

1. An **NMEA gateway or multiplexer with Wi-Fi** (NMEA 0183 over TCP or UDP, or NMEA 2000 through a converter).
2. Your device connected to that gateway's Wi-Fi network.
3. The gateway's **IP address and port**. The app's defaults are `10.10.100.254` and port `10111` (TCP), which suit many marine Wi-Fi gateways. Check your gateway's manual if yours differs.

Optional: a boat GPS on the NMEA network (or use the device's own GPS), an AIS receiver, and an RTSP camera.

### First launch

1. Accept the **location permission** request. It is used only for the device GPS (Anchor Watch, AIS range, GPS speed when no boat GPS is available).
2. On the first start you see a short **welcome**: you have **15 days to try all of EssentialSail, with no card and no commitment** (see section 10). Tap **Start the trial**; the link below it opens essentialsail.com, where all the features are described. Then a short **tips carousel** (7 tips, plus one about the trial if you have not bought a licence) explains swiping, themes, page settings, display options, **EssentialView** and **Hold & Move** (how to rearrange EssentialView), and ends with **"Ask Questions & Features"**, which shows the address of the online guide and support page (https://essentialsail.com/guide#support). Tick "don't show again" if you want. After an update that adds new tips, the carousel shows **only the new ones, once**.
3. Go to **Settings → Connections**, enter the gateway IP and port, and tap **Connect**.

## 3. Getting around

### Swiping between pages

**Swipe left or right** anywhere on the screen to move between pages. The page order is:

**EssentialView (1 to 5 pages) → EssentialAIS → EssentialAnchor → EssentialLogBook → EssentialCAM → NMEA → Diagnostics → Settings → Design**

Only the pages you have switched on are in the loop (see *Design*, section 9). Settings and Design are always at the end.

> **Out of the box only EssentialView is visible.** To use EssentialAIS, EssentialAnchor, EssentialLogBook, EssentialCAM or NMEA, switch them on in **Design → Visible Screens**. Wind, depth, speed, the compass and the classic **Dashboard** are no longer separate pages: add their instruments as widgets in EssentialView (users of an older version who had those pages switched on get EssentialView switched on automatically).

The app opens on **EssentialView** by default. You can change this in Settings → App → Start Screen.

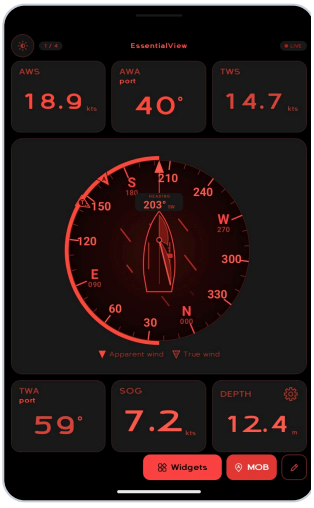
### Changing the theme (day / Elegant Black / Bordeaux / evening / night)

**Double-tap an empty area** of any screen to cycle through the themes:

1. **Light** (day) — grey/white, blue accents. The default.
2. **Elegant Black** — a refined black theme in the style of marine chart plotters: near-black background, graphite cards, warm grey figures and a single tangerine accent.
3. **Bordeaux my love** — a bordeaux hull-colour ground with ivory cards, wine-dark figures and a bordeaux accent; text and buttons that sit on the ground are cream and gold.
4. **Marine** (evening) — deep navy with cyan accents.
5. **Dark** (night) — black with red accents, to protect night vision.



Elegant Black theme



Dark (night) theme

All five are in the cycle by default. In **Design → Themes** you tick the themes the double tap goes through (at least one stays ticked); each theme has a small preview and the one in use is marked.

### Screen brightness

The **sun icon** at the top left of every page opens a small translucent panel with a slider: drag it to set the brightness of the app from 3 % to 100 %, or tap **Auto** to follow the system brightness again. Close the panel with the **X** or by tapping the icon again. The setting changes the brightness of the app only and is remembered.



Screen brightness panel

### Connection warnings

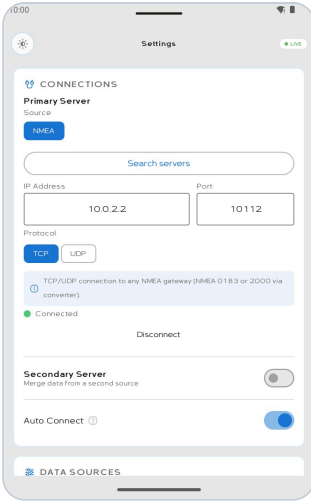
If you are connected but no instrument data arrives, a red banner appears at the top: **"Instruments disconnected — check connection."** Instrument values also clear to `---` when they go stale: depth, wind and speed after **10 seconds** without an update, GPS position after **15 seconds**.

## 4. Connecting to your instruments (Settings → Connections)

### Primary server

1. Enter the **IP address** and **Port**. An invalid entry turns red.
2. Choose **TCP** or **UDP**.
3. Tap **Connect**. The status indicator shows *connecting*, then *connected*. Errors appear in red under the indicator.

Changes to IP, port and protocol are saved automatically when you leave the field.



Settings

### Secondary server (optional)

Switch on **Secondary Server** to receive from a second source at the same time, for example the main gateway for instruments and a separate AIS receiver. It has its own IP, port, protocol, status indicator and Connect/Disconnect buttons, laid out the same way as the primary server's. Data from both servers is merged into one stream automatically. Default port for server 2 is `10110`.

### Auto Connect

Switch on **Auto Connect** to connect to your server(s) each time the app starts.

## 5. The instrument pages

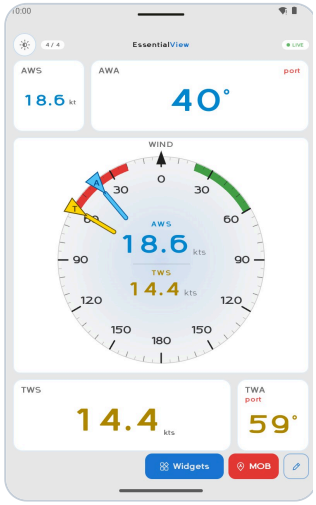
> Since the EssentialView version, **wind (5.1), depth (5.2), speed (5.3) and the heading compass (5.4) are widgets**, not pages: add them in EssentialView → **Widgets** → *Instruments*. The descriptions below apply to those widgets.

## 5.1 Wind

A compass-rose gauge shows the wind angle and speed. Port side is red and starboard side is green. Tap the round **A / T** button to switch between **Apparent (A)** and **True (T)** wind.

How true wind is obtained is set in Settings → Data Sources → **True Wind Calculation**:

- **Instrument (MWV/VWT)** — taken directly from your wind instrument. Most accurate.
- **Calculated (AWA + GPS SOG)** — computed from apparent wind and GPS speed.
- **Calculated (AWA + Log STW)** — computed from apparent wind and the boat log.




Wind gauge

## 5.2 Depth

Shows the depth in large numbers. If you have set a **draft** (Settings → Boat), the page shows **CLEARANCE** (depth minus draft) as the main figure and displays both depth and draft at the bottom.

Colour warnings are based on clearance under the keel:

| Colour | Clearance |
|---|---|
| Blue/red theme colour | 1.5 m or more — safe |
| **Amber** | Less than 1.5 m — caution |
| **Red** | Less than 0.5 m — danger |

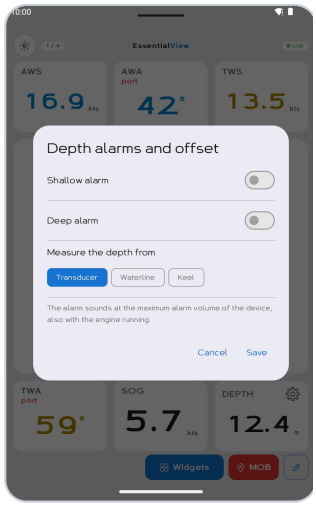
Warnings only apply when a draft greater than 0 is set. Units (metres, feet, fathoms) are set in Settings → Units.

## Depth alarms and offset (gear icon)

The **gear icon** on the Depth widget, on the Depth page and in **Settings → Boat** opens the same dialog:

- **Shallow alarm** — sounds when the depth is below the value you set. A good value is your draft plus 0.5 to 1 m (the **Draft + 0.5 m** button fills it in); use more where there is tide or swell.
- **Deep alarm** — sounds when the depth is above the value. At anchor it warns that the boat is dragging into deeper water.
- **Measure the depth from** — *Transducer* (what the sounder reads), *Waterline* or *Keel*, with the **distance from the transducer** in metres. The offset is added to (waterline) or subtracted from (keel) every reading, so all depth displays and alarms use the reference you chose.

When an alarm is on, a red banner appears on every page with the depth and two buttons: **Snooze 5 min** (the sound stops and comes back by itself) and **Stop** (silences it until the depth is back to normal). The alarm uses the alarm volume of the device, also with the engine running. The Depth colours follow your shallow alarm: red below it, amber in the metre above it.




Depth alarms and offset (gear icon of the Depth tile)

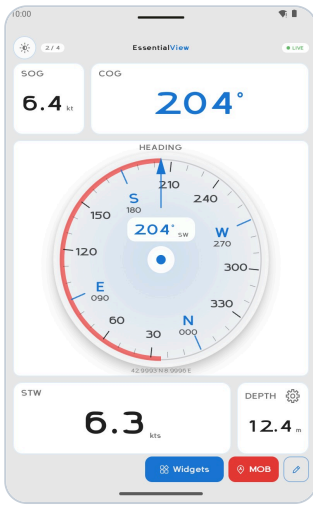
## 5.3 Speed

Large speed reading in knots or km/h. The label under the number shows the source: **GPS** (device GPS), **SOG** (NMEA GPS, speed over ground) or **STW** (boat log, speed through water). Choose the source in Settings → Data Sources → **Speed Source**. SOG includes the effect of current; STW measures the speed of the hull through the water.

## 5.4 Heading

A heading-up rotating steering compass, like a boat's own binnacle compass: the whole compass card (tick marks, N/E/S/W letters, degree numbers) turns so your **current heading always sits at the fixed marker at the top** — for example, if you are steering 180°, "S" appears at the top, not "N". This is different from the wind widget's dial, which shows angles relative to the bow. A colored rim on the outer edge shows which side the wind is on (green = starboard, red = port), and the large number in the middle shows the heading in degrees plus the nearest compass letter (e.g. "181° S").

If the Maneuver widget's plotted heading is active (see 5.5), an amber marker also appears on this compass at the target bearing, sliding toward the top marker as you turn onto it and disappearing once you arrive.



Heading compass

## 5.5 Dashboard (retired)

> The classic Dashboard page has been **replaced by EssentialView** and is no longer offered in Design. All its widgets are available in EssentialView → **Widgets** → *Instruments*. The text below describes the former page.

Several instruments on one page. The page holds **2 to 6 widgets** from: Depth, Wind, Wind Speed, Speed, Heading, AIS Radar, Anchor Watch, Camera and Maneuver.

- Tap the **gear icon** (top right of the Dashboard) to choose which widgets to show. Tick or untick; the layout adapts (2 side by side, 3 as one large plus two small, 4–6 as a grid).
- **Double-tap or long-press a widget** to promote it to the first (largest) position.
- Inside widgets: the **A/T** button toggles wind mode, the **Z** button on the AIS mini-radar cycles its range (6 → 3 → 1.5 → 0.7 → 0.3 nm), and the Anchor widget has Drop/Weigh buttons.

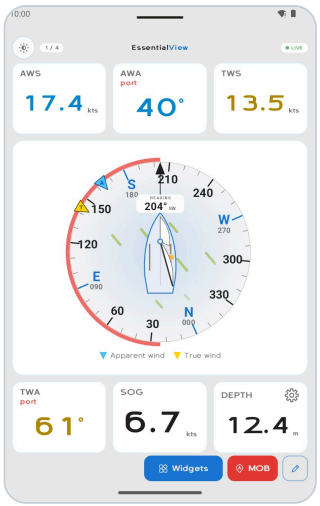
### Maneuver widget (experimental)

A tack/gybe helper. Pick a target wind angle (**30°, 60°, 90° or 120°** off the wind, on the opposite side to your current tack), then tap the **left or right turn arrow** — each arrow shows its own icon (bow-crosses-the-wind for a tack, stern-crosses-the-wind for a gybe) and how many degrees that turn takes, so you can compare both ways before committing. Turning left or right always ends on the same heading; only the maneuver and the turn distance differ, so there is no "wrong" choice here. Once you tap a direction, the widget shows **NEW HEADING** with the target number, and an amber marker appears on the Heading compass. The widget resets itself automatically once you arrive on the new heading (or tap the **X** to cancel early).

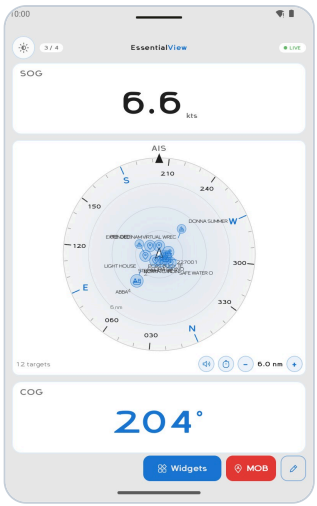
This widget is still experimental: its text is currently only in English regardless of your chosen app language, and it may change or be removed in a future update.

## 5.6 EssentialView (new dashboard)

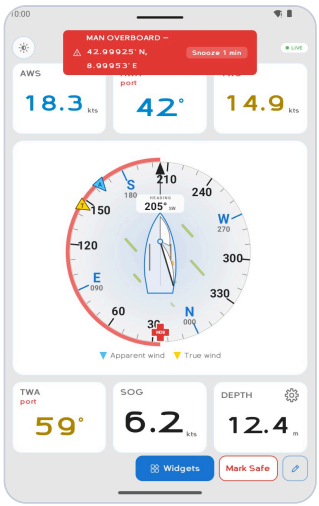
Turn it on in **Design → Visible Screens → EssentialView**. By default the middle of the page shows the **Wind & sails** gauge: a compass card like the compass widget with a **boat seen from above** whose sails trim themselves to the wind.




Wind & sails




AIS radar widget




Man overboard declared

## Wind & sails gauge: every symbol

The small legend under the gauge only names the two wind marks (**apparent wind** and **true wind**). Everything drawn on the gauge is explained here:

| Symbol | Where | Meaning |
|---|---|---|
| **Blue arrow + line** at the top | fixed, top of the dial | **Lubber line**: the direction the bow points. The compass card turns underneath it. |
| **HEADING** box | just ahead of the bow | Your heading in degrees (e.g. 189°) and its compass point (e.g. S). "---" = no heading. |
| **N / E / S / W** + 000 / 090 / 180 / 270 | on the turning compass card | Cardinal points with their bearing. The other numbers (30, 60 … 330) are bearings every 30°; small ticks every 10°. |
| **Green or red triangle** | on the rim | **Apparent wind**: the direction the wind you feel on board comes from. **Green = from starboard**, **red = from port**. |
| **Amber ring** | on the rim | **True wind**: where the wind comes from when the boat's own speed is taken out (needs boat speed). Shown when "True wind" is on in **Widgets**. |
| **Blue diamond** | on the rim | **COG**, your course over ground from the GPS. Shown when "COG" is on in **Widgets**. The gap between the lubber line and the diamond is your drift / leeway. |
| **Green or red half-circle** around the edge | fixed, left or right half | The **side the wind is on**: right half green = wind from starboard, left half red = wind from port. |
| **Moving dashes** inside the dial | flowing across the boat | **Wind streaks**: they come from the apparent wind direction. Their **speed** follows the wind (slow in light air — about 4 s to cross the dial at 2 kn — fast in strong wind, under 1 s from 30 kn) and their **colour** shows its strength on the **Beaufort scale** (one colour per force, see *5.7 Colours*): blue = calm / light air, green = breeze, pale yellow = strong breeze / near gale, orange = gale to storm, red = violent storm / hurricane. |

| Symbol | Where | Meaning |
|---|---|---|
| **Mainsail and genoa** | on the boat | Drawn in the trim that suits the apparent wind angle: sheeted in close-hauled, eased on a reach, **goose-winged** (genoa on the other side) on a run. Sails **flapping** = you are pointing too high (apparent wind under about 24°). No wind data = sails stowed, boom on the centreline. |
| **No triangle, no streaks, sails stowed** | whole gauge | **Calm**: below **1 knot** of apparent wind a direction means nothing, so none is drawn (the same for the true-wind ring below 1 kn of true wind). Note: with the boat **moving** and no wind, the wind you feel on board comes from the **bow** at the boat's speed (motoring headwind) — that is what the masthead sensor measures, and the gauge shows it on the bow. |
| **Two grey lines** on the deck | either side of the mast | The **genoa car tracks**. Shown when "Genoa car" is on in **Widgets**. |
| **Amber square + dashed line** | on the leeward track | The **suggested genoa car position** and the genoa sheet. The line under the gauge says it in words: position 1 = all forward … 5 = all aft. Hidden when the sails are flapping or goose-winged. *General rule of thumb (forward in light air, aft in strong wind, forward again as you ease the sheet), not advice specific to your boat.* |

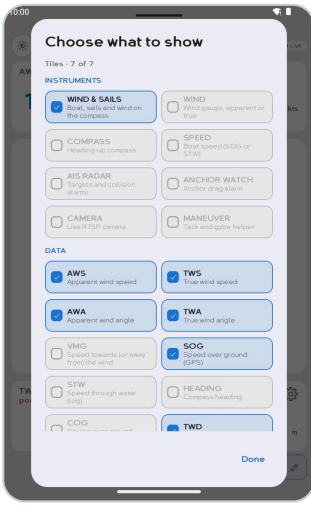
**Several pages.** In **Design → Visible Screens**, under EssentialView, choose how many EssentialView pages you want (**1 to 5**). Swipe left or right to go from one to the next, like any other page; the page header shows which one you are on (e.g. "2 / 3"). Each page has its own widgets. New pages start from a sensible layout (compass, AIS radar, anchor watch, wind) that you can change freely.

**Choosing what to show.** Tap **Widgets**. The list has two parts:

- **Instruments** — the Wind & sails gauge and the classic widgets with their own buttons: wind, compass, speed, AIS radar, anchor watch, camera, and maneuver. They work exactly as on the classic Dashboard.
- **Data** — big-number tiles: AWS, TWS, AWA, TWA, VMG, SOG, STW, HEADING, COG, TWD, DEPTH and genoa car.

Every item has a one-line explanation. Up to 8 widgets fit around the centre in landscape, 6 in portrait. In the same panel you choose what the Wind & sails gauge draws (true wind, COG, genoa car). Numbers grow as large as their tile allows and follow your units (Settings).

**Hold & Move (rearranging widgets). Hold a widget for a moment, then move it onto another one**: the two swap places, and the widget lands where you lift your finger. This works for every widget, including the instruments (press on a part of the widget that is not a button). Whatever is in the **centre is always the biggest**. In portrait the centre stays in the middle of the screen with half of the widgets above and half below; a widget takes the shape of the place it lands in (alone in its row = wide rectangle, two in a row = one square + one rectangle, three = three squares). Tap the **pencil** to show the outlines and remove widgets with **×** (while the pencil is on, the instruments' buttons are disabled so you cannot press them by mistake); tap **Done** when finished.



Widgets: choose what to show

**MOB is a button, not a widget.** The red **MOB** button sits next to **Widgets** on every EssentialView page (in the header in landscape, in the bottom bar in portrait). How it works is in section 5.8.

## 5.7 Colours: what each colour means

The same colours mean the same thing everywhere in the app. The "theme colour" is blue in the Light theme, cyan in Marine and red in Dark (night); white/black text is the theme's normal text colour.

### General

| Colour | Where | Meaning |
|---|---|---|
| **Green dot + LIVE** | page header, top right | Connected and receiving data. **Grey dot + OFFLINE** = not connected. |
| **Red banner** | top of the page | "Instruments disconnected — check connection": connected but no instrument data; also the MOB banner with the MOB position. |
| **Theme-colour outline** | around a tile | The tile that matches the A/T mode currently selected (wind pages), or every tile while the pencil (edit mode) is on. |

### Wind (Wind & sails gauge, Wind widget, wind tiles, compass)

| Colour | Where | Meaning |
|---|---|---|
| **Green** | AWA / TWA tiles and the "starboard" label, apparent-wind triangle, rim of the compass and of the gauge | Wind from **starboard** (right). |
| **Red** | same places | Wind from **port** (left). |
| **Amber** | TWS and TWD tiles, true-wind ring on the gauge | **True wind** (the boat's own speed taken out). |
| **Normal text colour** | AWS tile; AWA / TWA showing "---" | Apparent wind speed; no direction in a calm (under 1 kn). |
| **Theme colour** | VMG and COG tiles, COG diamond on the gauge | Course and speed made good (GPS). |
| **Amber** | Genoa car tile and the suggested car on the gauge | Suggested genoa car position (1 = forward … 5 = aft). |
| **Beaufort colours** | wind streaks inside the Wind & sails gauge | Apparent wind strength, one colour per Beaufort force (table below). |

Wind streak colours (Beaufort force, apparent wind in knots):

| Force | Knots | Description | Colour |
|---|---|---|---|
| 0 | < 1 | Calm | blue `#0B8CF0` |
| 1 | 1–3 | Light air | light blue `#6EC6FF` |
| 2 | 4–6 | Light breeze | blue-green `#80C8C0` |
| 3 | 7–10 | Gentle breeze | green `#22DD22` |
| 4 | 11–16 | Moderate breeze | light green `#66EE33` |
| 5 | 17–21 | Fresh breeze | yellow-green `#BBEE22` |
| 6 | 22–27 | Strong breeze | pale green `#E0F5A0` |
| 7 | 28–33 | Near gale | pale yellow `#FFFFA0` |
| 8 | 34–40 | Gale | yellow `#FFD966` |
| 9 | 41–47 | Strong gale | amber `#FFB820` |

| Force | Knots | Description | Colour |
|---|---|---|---|
| 10 | 48–55 | Storm | salmon `#FF9A70` |
| 11 | 56–63 | Violent storm | orange-red `#FF5A10` |
| 12 | 64 + | Hurricane | red `#D83A10` |

Below 1 kn (calm) no streaks are drawn at all.

**Compass (Heading widget)**

| Colour | Meaning |
|---|---|
| **Green / red rim** | Side the true wind is on (starboard / port); no rim in a calm. |
| **Amber marker** | Target heading chosen in the Maneuver widget. |
| **Red marker** | Bearing to the MOB position while a man overboard is active. |

**Depth (Depth widget and depth tiles)** — only with a draft set (Settings → Boat):

| Colour | Meaning |
|---|---|
| **Green / theme colour** | 1.5 m or more under the keel — safe. |
| **Amber** | Less than 1.5 m under the keel — caution ("SHALLOW"). The "MIN 10 MIN" tile is always amber: it is the shallowest depth of the last 10 minutes. |
| **Red** | Less than 0.5 m under the keel — danger ("LOW"). |

The EssentialView DEPTH tile shows the depth in the normal text colour.

**EssentialAIS (page and AIS widget)**

| Colour | Meaning |
|---|---|
| **Green dot** | Normal target. |
| **Red dot with a ring** | Target raising the alarm (collision risk or inside the alarm distance). |
| **Orange dashed ring, "CBDR"** | Constant bearing, decreasing range. |
| **Orange circle** around your boat | Alarm distance (shown when it is inside the radar range). |
| **Amber ALARMS number** | At least one target with collision risk. |
| **Amber "No GPS"** | Your position is missing: no ranges or collision risk. |
| **Red Mute button ("Unmute")** | Alarm sound silenced. **Orange Snooze button** = silenced for 5 minutes. |

**EssentialAnchor (page and Anchor widget)**

| Colour | Meaning |
|---|---|
| **Green "Holding"** | The boat is inside the swing circle. |
| **Red "DRAGGING!" + red banner** | The boat has left the circle: the alarm sounds. |

| Colour | Meaning |
|---|---|
| **Light-blue line** | Trail of where the boat has been. |
| **Green / red box** under the button | GPS fix available / waiting for GPS. |

### Man overboard and Maneuver widgets

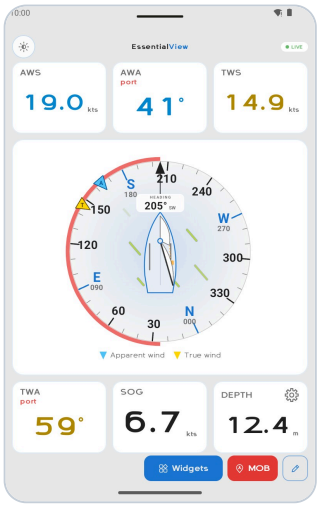
| Colour | Meaning |
|---|---|
| **Red MOB button / banner** | Man overboard active: position, distance and bearing to it. |
| **Red / green tack label** (Maneuver) | Current tack: port (red) or starboard (green). |

### Diagnostics log

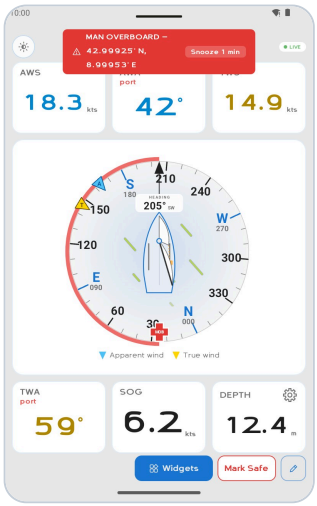
| Colour | Meaning |
|---|---|
| **Red line** | Confirmed disconnection. |
| **Orange line** | Anomaly that can cause one (e.g. data stalled). |

## 5.8 Man overboard (MOB)

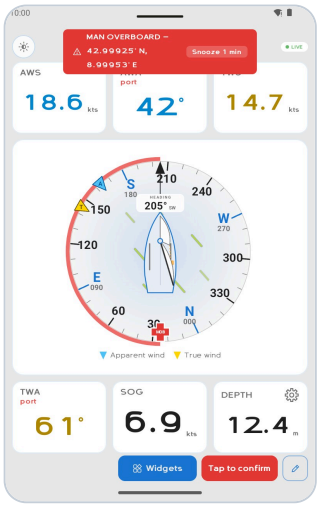
The red **MOB** button marks the place where someone fell overboard and keeps pointing you back to it. It is on every EssentialView page, next to **Widgets** (in the header in landscape, in the bottom bar in portrait), and it works with the boat's GPS or the device's GPS.




The red MOB button, ready




Man overboard declared




Mark Safe: tap again to confirm

### Declare a MOB

1. Press the red **MOB** button. One press is enough: the app does not ask for a confirmation, because every second counts.
2. The app needs a **GPS position**. Until it has one the button is pale and cannot be pressed. The position it saves is the **position of the boat at the moment you press**.

### What happens

- A **red banner** appears at the top of **every page** (EssentialAIS, Anchor, LogBook, Settings…): *MAN OVERBOARD — latitude, longitude*, with a **Snooze 1 min** button.

- The device **beeps every 1.5 seconds**, at the **alarm volume** (not the media volume). **Snooze 1 min** silences the beep for one minute and it **comes back by itself**; only **Mark Safe** stops it for good.
- A **red cross marked MOB** appears on the compass and the wind dials (the Wind & sails gauge, the compass and the wind gauge). It shows the **direction of the MOB point as seen from the boat**, relative to your heading, and keeps moving as you steer and as the boat moves: turn until it is at the top of the dial and the bow points at the MOB point. It needs a heading (NMEA compass, tablet compass or course over ground).
- The button turns into **Mark Safe**.
- If an **EssentialLogBook** log is open, it records when the MOB started and when it ended, and shows a small red cross on the map at the position.

**Mark Safe: ending the MOB**

1. Press **Mark Safe**. The button turns solid red and says **Tap to confirm**.
2. Press it again within **4 seconds**. The banner, the beep and the cross disappear.

If you do not confirm, the button goes back to *Mark Safe* and the MOB stays active. The double press is there so that nobody ends a MOB by accident. For a second and a half after Mark Safe the button ignores presses, so a quick double tap does not declare a new MOB.

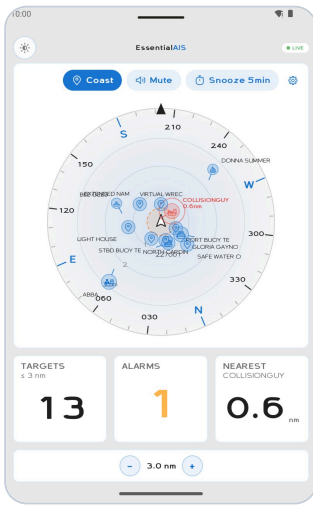
**Good to know**

- The MOB point is **fixed** where the boat was when you pressed; it does not drift with the current. Press as soon as the person falls.
- **Free trial:** the MOB works in full during the 15 days. If you declare a MOB in the last 24 hours of the trial, the app tells you the exact time the trial ends (section 10).
- **Rehearse it at the dock** with the EssentialSail simulator (chapter 13), which gives the app a GPS position, so you know what the banner, the beep and the cross look like before you need them.

> **The app is an aid, not the rescue.** It marks a position and points to it. The crew's man-overboard drill comes first: shout, keep pointing at the person, throw the lifebuoy and follow the procedure you trained.

# 6. EssentialAIS — AIS radar and collision avoidance

Requires an AIS receiver feeding the NMEA network, and a valid GPS position.



EssentialAIS: collision alarm

## Reading the radar

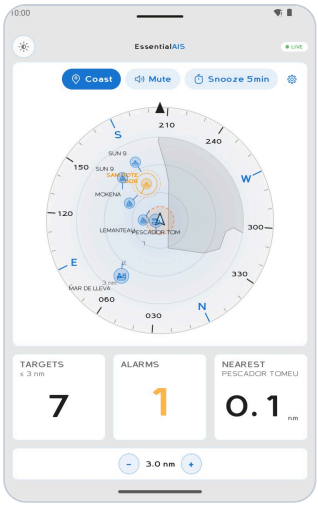
The radar is centred on your boat. Other vessels appear as targets, each drawn as the **icon of its type** (sailing boat, pleasure craft, fishing vessel, tug, cargo ship, tanker, passenger ship, high-speed craft, military, pilot, search and rescue and so on) inside a transparent circle, with its name next to it. Leisure craft are drawn smaller than the professional ships, and a short line out of the circle shows where the vessel is heading. The type reaches the app with the static AIS messages (every few minutes), so a vessel may show the "unknown" icon for a while; types are remembered between sessions. If you prefer plain dots, switch **Vessel type icons** off in the settings of the AIS page. A counter shows the number of **Targets** in range, and the number of **Collision** (Warnings) targets.

- **Accent colour of the theme** — normal target
- **Red with a ring** — the target is raising the alarm: collision risk (CPA/TCPA) or, with *Collision Alarm Only* off, inside the alarm distance

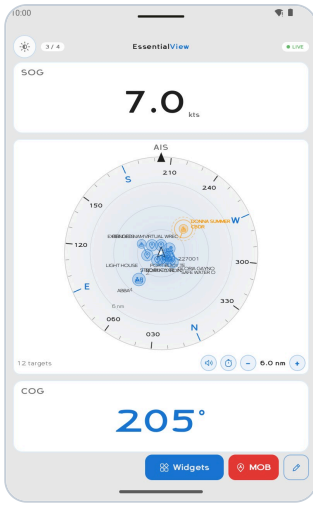
- **Orange, dashed ring, "CBDR" label** — constant bearing, decreasing range

Small Class B boats show their **name** once received (names are remembered between sessions); until then they show their MMSI number.

Messages on the radar: **"No AIS data received"** means no AIS targets have arrived; **"No GPS"** means your own position is missing, and the radar cannot compute ranges or collision risk without it.



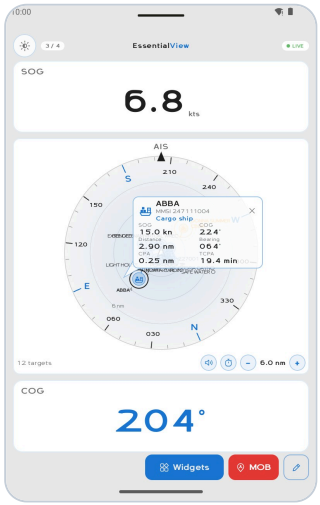

EssentialAIS with the coast




EssentialAIS: vessel type icons

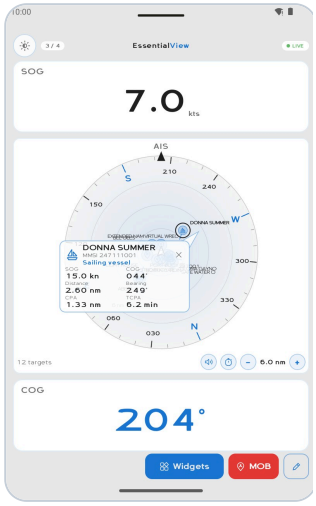
## Zoom, move and vessel details

- **Zoom with two fingers**, as on a map: the radar zooms towards the point between your fingers, smoothly from 0.25 nm to 30 nm. The **– / +** buttons jump to the next fixed range: 0.25, 0.5, 0.75, 1.5, 3, 6, 12, 24 or 30 nm.




Tap a vessel: icon, type and details

- **Move the radar** with one finger on the dial. The **recenter** button appears at the bottom right once you have moved it and brings your boat back to the middle. Gestures that start outside the dial are not used by the radar, so swiping between pages still works.
- **Tap a vessel** to open a small translucent bubble next to it with its **icon and type**, name, MMSI, SOG, COG, distance, bearing, CPA and TCPA. Close it with the **X**.
- **Other AIS objects.** Search-and-rescue **aircraft** (helicopter symbol), **aids to navigation** (buoys, lights, beacons, with the pin symbol; virtual ones and ones off position are marked in the bubble) and **safety text broadcasts** are decoded. They are shown on the radar but never take part in collision, proximity or CPA/TCPA alarms.
- The **AIS widget** of EssentialView works the same way: two-finger zoom, move, icons, the alarm sound with **Mute** and **Snooze 5min** (two small round buttons). The vessel bubble opens when the widget is in the big centre slot.




AIS widget in the big slot, with a vessel selected

## Collision settings (shield icon in portrait, gear icon in landscape)

**Vessel type icons** — on (default): each vessel is drawn with the icon of its type; off: a plain dot.

**AIS Alarm**

- **Enable AIS Alarm** — sound an alarm for nearby vessels.

- **Collision Alarm Only** — on (default): alarm **only** for vessels with a collision risk (CPA/TCPA guard or CBDR); a vessel that is close but on a course that does not converge with yours does **not** sound the alarm. Off: also alarm for every vessel within a distance you set (unit **km** or **nm**; default 0.5), whatever its course.

**CPA / TCPA Guard Zone** — CPA is the Closest Point of Approach, TCPA the time until it. An alarm triggers when a vessel will pass closer than the **CPA guard** within the **TCPA guard** time. Presets:

| Preset | CPA | TCPA |
|---|---|---|
| Coastal (default) | 0.3 nm | 15 min |
| Offshore | 1 nm | 20 min |
| Open Sea | 2 nm | 30 min |

**CBDR Detection** — based on the COLREG rule of thumb: if a vessel's bearing stays constant while the distance shrinks, you are on a collision course. Adjust **Tolerance** (default 2°), **Min Samples** (default 3) and **Window** (default 120 s). A vessel is flagged only after it has been watched for at least **30 seconds** (or a quarter of the window, if longer), its bearing stayed within the tolerance, its distance really decreased, and at that closing speed it would reach you within the **TCPA guard** time. A distant vessel closing very slowly is not flagged.

**How the risk is computed.** CPA and TCPA come from your position, course and speed over ground (GPS) and the vessel's AIS position, course and speed, both assumed to keep going straight. A vessel is a collision risk when it will pass closer than the CPA guard **and** that moment is within the TCPA guard time (and still ahead, not already passed), or when CBDR flags it. Your own speed and course must come from a GPS: with the boat stopped the calculation assumes you are not moving.

If both CPA/TCPA and CBDR are off, the dialog shows "All collision detection is disabled". Tap **Save** to apply changes.

### Silencing an alarm

The AIS page always shows two labelled buttons at the top of the radar: **Mute** (speaker, turns red as **Unmute** while silenced — tap again to hear the alarm) and **Snooze 5min** (silences for **5 minutes**, then the sound comes back by itself). They are always there, so you can also silence in advance. The vessel in alarm is drawn **red with a ring** on the radar (there is no separate alarm strip, so the buttons are never covered). A **new** vessel entering the alarm turns the sound back on.

> The alarm **sound** plays while the **AIS page** or an **EssentialView page that shows the AIS widget** is on screen. On the other pages nothing beeps: keep one of them open when you rely on the sound alarm.

### Your own vessel

**Own MMSI** (Settings → AIS) removes your boat from the target list. If your AIS transponder sends its own data (VDO sentences), your MMSI and boat name are detected automatically and shown in green in Settings → Boat.

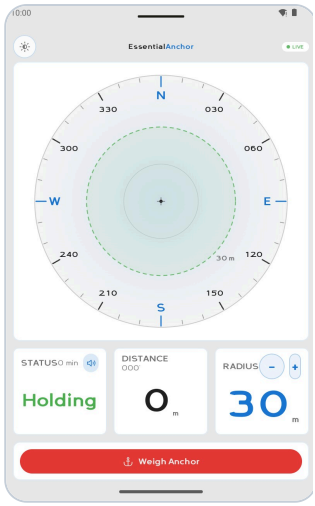
## 7. EssentialAnchor — anchor watch

A single-screen radar that watches for anchor drag using GPS.

1. Make sure a **GPS fix** is available. Until then the button is disabled and shows "Waiting for GPS…".
2. Set the **swing radius** with the **–** and **+** buttons (5 m steps, **5 to 200 m**, default 30 m). Choose a radius that covers your rode length plus the boat's length, and allow for a wind shift.
3. Tap **Drop Anchor** when the anchor is down and holding. The current position becomes the anchor point.

4. The radar shows a dashed circle for the radius, compass points and a blue trail of where the boat has drifted. Next to it (below it in portrait) three tiles: **STATUS** (*Holding* in green, elapsed minutes), **DISTANCE** from the anchor with its **bearing**, and **RADIUS** with the **–** / **+** buttons.
5. If the boat leaves the circle, the status turns red (*DRAGGING!*), a red **ANCHOR DRAG ALARM** banner appears on the radar and the alarm sounds.
6. The **speaker button** in the STATUS tile turns the alarm sound on or off.
7. Tap **Weigh Anchor** to stop.

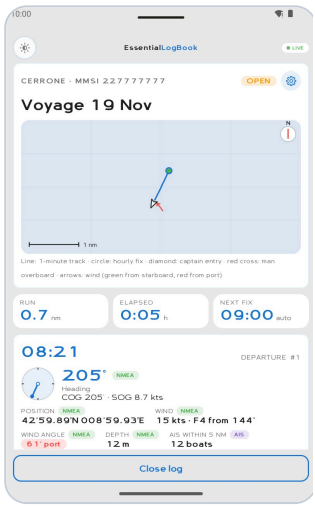
In landscape, the radar card is on the left and the tiles in a column on the right; in portrait the tiles are under the radar. Anchor Watch depends on the device GPS or boat GPS and on the device staying on: enable **Keep Screen On** (Settings → App) and keep the device powered.



EssentialAnchor: anchor set

# 8. EssentialLogBook — the digital ship's log

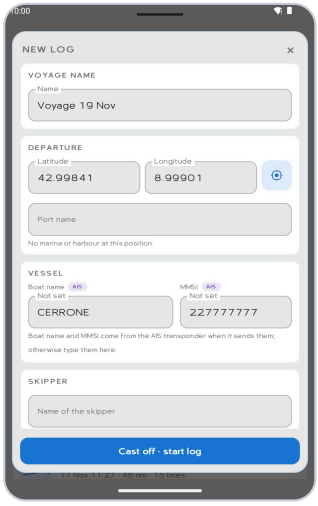
EssentialLogBook writes your ship's log for you: a **position and heading every minute**, a **full line every hour** and the **entries you add yourself**. It works with no internet; the internet only adds the weather and the name of the departure port.



EssentialLogBook: open log

## Starting a log

Open the **EssentialLogBook** page and tap **New log**.



New log: departure from the GPS

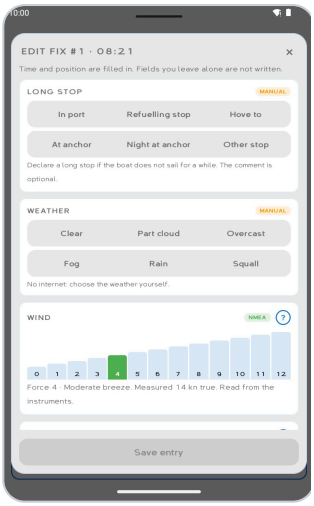
1. **Voyage name**: free text (it starts with the date).
2. **Departure**: **latitude and longitude** come from the GPS (or from your own AIS). The **target button** next to them reads the position again; you can also type the coordinates by hand. The **port name** is filled in only when the internet can match the position exactly to a marina or harbour; near a port, at anchor or at sea it stays empty and you can type it. If there is no connection at the start, the name is added automatically, as a correction line, as soon as the connection is back.
3. **Vessel**: the boat name and the MMSI come from **Settings → AIS** or from your AIS transponder (the **AIS / NMEA** badge shows the source). You can correct them here.
4. **Skipper** and **people on board**: the number can be changed at any time; the names are optional, and each named person has a status (**Optimal, Good, Tired, Sick**) with a short description for the last two.
5. Tap **Cast off · start log**.

## While the log is open

- The **map** shows the 1-minute track, an hourly circle, a diamond for every captain entry, a small red cross at the position of a **man overboard** and **wind arrows** (green: wind from starboard, red: from port) drawn relative to your course. The **RUN**, **ELAPSED** and **NEXT FIX** tiles sit under it.
- Every hour on the hour the app writes a **line by itself**: position, average heading and its spread, COG and SOG, true wind with its Beaufort force, wind angle, depth, weather (internet), the AIS boats within 5 nm and the

crew. Each value shows where it came from (**NMEA, NET, AIS, MANUAL**).

- Every hourly line has a small **Edit** button on the right: it opens the **captain's entry** for that line. Change what you want: weather (from the internet, or choose it yourself), **sea state** on the Beaufort scale (the **?** button explains the table), engine on/off, fuel, sails, crew and a note. Only the fields you change are written.
- **Long stop.** If the boat has not sailed for an hour, the line says so and offers **Add a stop** (also inside **Edit**): *In port, Refuelling stop, Hove to, At anchor, Night at anchor* or *Other*, with an optional comment. With **EssentialAnchor** running, the stop is recorded as *at anchor*, with the anchor position and radius.
- The **AIS boats** within 5 nm are written in small type (name and MMSI), and a **man overboard** is logged when it starts and when it ends.
- To fix a mistake, tap **Correct or comment** under a line: the **Correct line** window opens. The original line stays and your correction is added as a new line with the date, the time and the reason.

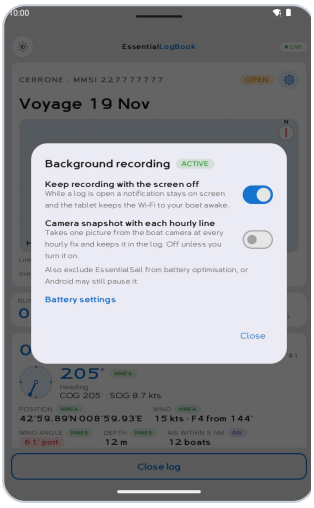



Captain entry

## Recording with the screen off (the gear button)

The round **gear button** at the top right of the first card of the LogBook page (on the start page and on the open log) opens **Background recording**.

- **Keep recording with the screen off** is **on** by default. While a log is open, a notification *EssentialLogBook* stays in the status bar (log name, time, miles, next fix) and the tablet keeps the Wi-Fi to your boat's network awake. The minute track then continues with the screen off or with another app in front.
- If you switch it **off**, the track has a gap whenever the screen is off or the app is in the background.
- **Camera snapshot with each hourly line** is **off** by default. When you switch it on, the app takes one picture from your boat camera (EssentialCAM) at every hourly fix and keeps it in the log.
- On Android 13 and later, allow **notifications** when the app asks.
- Tap **Battery settings** and exclude EssentialSail from battery optimisation: some tablets pause apps otherwise.
- Good to know: if you remove EssentialSail from the recent apps, recording stops; open the app again and the log carries on with the gap marked. Recording with the screen off uses more battery: keep the tablet on charge on a long passage.




Background recording (gear button)

## Closing, exporting and deleting

- **Close log** seals the log (SHA-256): from then on no line can be added or changed.
- **Export…** gives a **PDF**, **CSV**, **XLSX**, **GPX** or **GeoJSON** file of one log; **Backup of all logs…** gives one file with all of them.
- **Delete** (on a closed log, with a confirmation) erases it from the tablet. Export it or make a backup first if you want to keep a copy. The log that is open can never be deleted.
- **Settings → App → Save full backup / Restore full backup…** saves **all your settings and every closed log** in one file and brings them back on this or another tablet. Logs already on the tablet are kept; a log that is still open is not part of the file, so close it first.

### Your data

The logs stay on the tablet. The position is sent to the internet only when it is connected: to **Open-Meteo** for the weather and to **OpenStreetMap** for the port name.

## 9. EssentialCAM, NMEA monitor, Diagnostics, Settings and Design

### EssentialCAM (camera)

Shows live video from any RTSP camera (including ONVIF cameras and VLC streams). Tap the gear icon and enter:

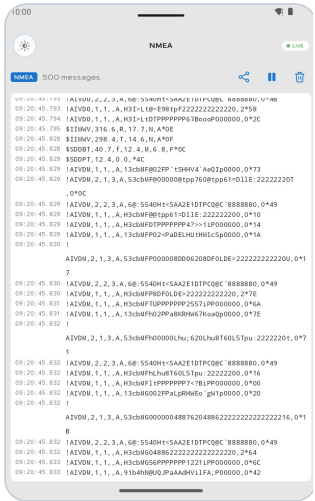
- **Camera Name**, **IP Address**, **Port** (default 554)
- **Username / Password** — leave both empty if the camera needs no login. Tap the eye icon to show the password.
- **RTSP Path** — for example `/Streaming/Channels/101`. The dialog lists common paths (Type A–E, Marine POE `/stream1`, ONVIF `/onvif1`, Generic `/live`).
- **RTSP Transport** — **Auto** (recommended, tries TCP first), **Force TCP** (more reliable) or **Force UDP** (faster, may drop frames).

A preview of the URL is shown with the password hidden. Tap **Save & Connect**. Closing the dialog also saves. If the picture fails, the page shows "Connection Failed" with **Retry** and **Settings** buttons. The stream reconnects automatically when it ends.

### NMEA monitor

Shows the raw sentences as they arrive. Use it to check that data is flowing and to identify which sentences your instruments send. **Pause** freezes the list; **Clear** empties it. The counter at the top shows how many messages are listed; the three buttons on the right share, pause and clear the list.

**Exporting the last 12 hours.** While the app is open, every NMEA sentence received is also saved on the device for **12 hours** (older data is deleted automatically; the storage used is capped). Tap the **share** button on this page, or **Settings → Support → Export NMEA data (last 12 h)**, to send a zip of it by e-mail, Drive, etc. The files are plain NMEA 0183 (one file per hour, UTC), readable and replayable by any NMEA tool. Nothing is recorded while the app is closed.



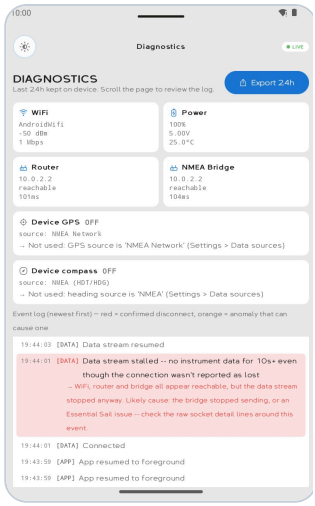
NMEA monitor

### Diagnostics page

Switch it on in **Design → Visible Screens**. It tells you *why* data is missing, and it is the page to open before you ask support for help.

- **Export 24h** (top right) sends the event log of the last 24 hours, which is kept on the device, by e-mail, Drive, etc.
- **Live status cards**: **WiFi** (network name, signal strength in dBm, link speed), **Power** (battery level, charging, voltage, temperature, power-save mode), **Router** (its address, whether it answers, response time) and **NMEA Bridge** (your gateway: address, whether it answers, response time). A card is flagged when something is wrong: a weak signal (below −75 dBm), power-save mode or a hot battery (above 42 °C), a router or gateway that does not answer.
- **Device GPS** and **Device compass**: what the tablet's own GPS and compass are doing and, after an arrow (→), the diagnosis. For example *Not used: GPS source is 'NMEA Network'* means you chose the boat's GPS in Settings → Data Sources.

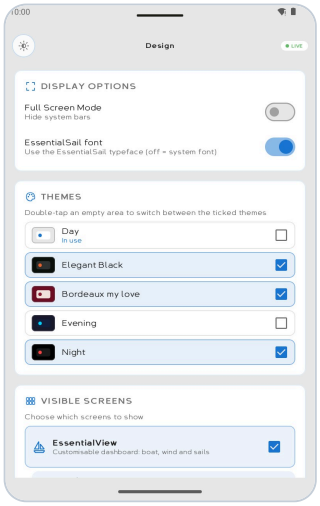
- **Event log** (newest first): each line has a time and a tag such as [DATA] or [APP]. **Red** = a confirmed disconnection; **orange** = an anomaly that can lead to one, for example the data stream stalled while Wi-Fi, router and gateway all look fine, which points at the instruments or the gateway rather than the tablet.



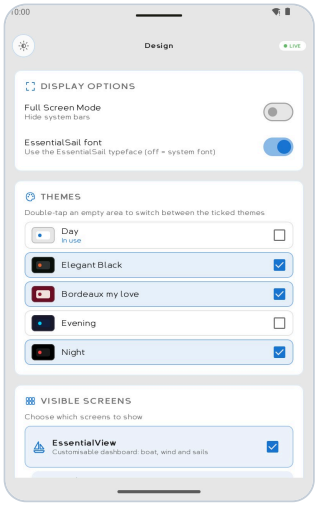

Diagnostics page

## Design

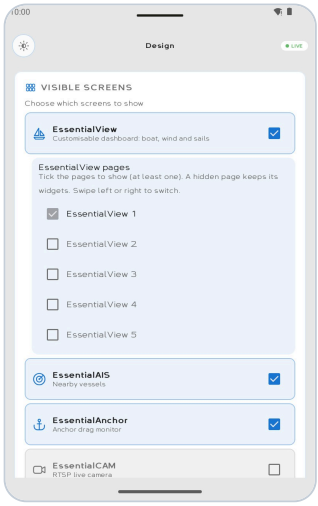
The Design page is where you decide what the app looks like and which pages it has. It is one scrolling page of cards.




Design




Design: Themes

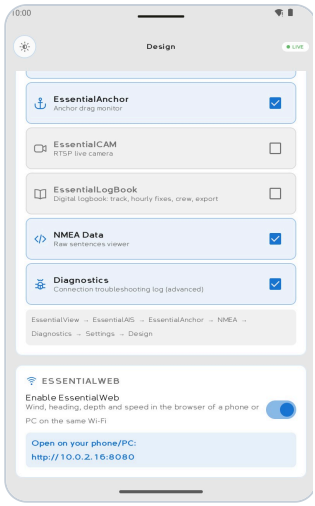



Design: Visible Screens

- **Display Options**: **Full Screen Mode** hides the Android system bars for a dedicated helm display (swipe from the screen edge to bring them back for a moment). **EssentialSail font** uses the EssentialSail typeface; switch it off to use the system font.
- **Themes**: tick the themes the double tap goes through: Day, Elegant Black, Bordeaux my love, Evening and Night (at least one stays ticked). Each has a small preview and the one in use is marked **In use**. The sun icon at the top left of every page opens the brightness panel (section 3).
- **Visible Screens**: tick the pages you want: EssentialView, EssentialAIS, EssentialAnchor, EssentialCAM, EssentialLogBook, NMEA Data and Diagnostics. At least one must stay selected. Under **EssentialView** a panel lists **EssentialView pages 1 to 5**: tick the pages to show (at least one); a hidden page keeps its widgets. A grey line at the bottom shows the resulting order of the pages; Settings and Design are always last.
- **EssentialWeb**: switch on **Enable EssentialWeb** to see wind (apparent / true), heading, COG, speed (SOG / STW) and depth or clearance in the **browser of a phone or PC on the same Wi-Fi** as the tablet. The card then shows the address to open (for example `http://192.168.1.20:8080`). The page has the same look and colours as the app, a LIVE / OFFLINE indicator, and works in portrait on phones. It is read-only (nobody can change anything from the browser) and has no password, so use it only on your boat's own Wi-Fi. It works while the app is open. Off by default.

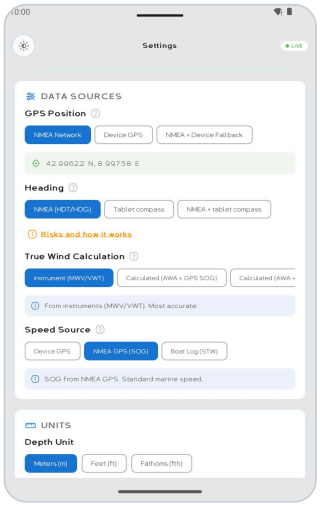
## Settings

Settings is one scrolling page of cards:

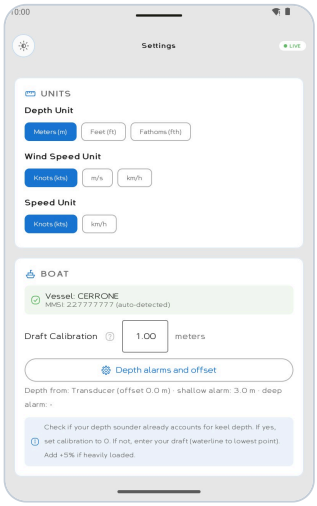



Design: EssentialWeb

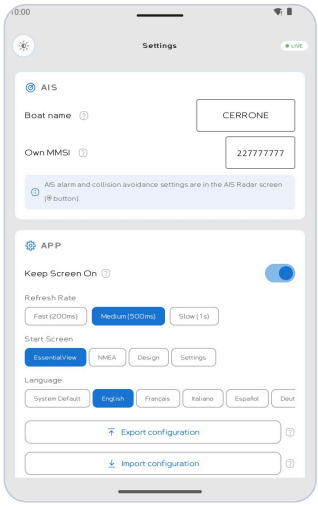
| Card | Contents |
|---|---|
| **Connections** | Primary and secondary server, Auto Connect (section 4) |
| **Data Sources** | GPS Position, True Wind, Speed Source |
| **Units** | Depth (m / ft / fathoms), Wind speed (kn / m/s / km/h), Speed (kn / km/h) |
| **Boat** | Detected vessel name/MMSI, **Draft Calibration** |
| **AIS** | Own MMSI |
| **App** | Keep Screen On, Refresh Rate, Start Screen, Language, **Export configuration**, **Import configuration** (both with a licence), Close Application |
| **Subscription** | Licence or trial status, daily trial reminders on/off, See the plans / Switch to lifetime, **?** help |
| **Support** | Device info, Save Debug Report, **Export NMEA data (last 12 h)**, EULA, Privacy Policy |




Settings: Data Sources




Settings: Units and Boat




Settings: AIS and App

**GPS Position** — *NMEA Network* (boat GPS, default), *Device GPS* (the phone/tablet's own GPS, for use without instruments), or *NMEA + Device Fallback* (NMEA first, device GPS as backup). A panel shows whether GPS is active and the current coordinates. With a device-GPS option selected, a second panel explains the device GPS state:

searching for satellites (with how many are in view/in use), satellite fix and its accuracy, or what is blocking it (permission not granted, Location turned off in Android, no GPS receiver in the device) with a button to fix it. A tablet without a GPS receiver falls back to the approximate network (Wi-Fi) position, which has no speed or course.

**Heading** — where the boat heading (CAP) comes from: *NMEA (HDT/HDG)* (boat compass or autopilot, default), *Tablet compass* (the device's own magnetic compass), or *NMEA + tablet compass* (NMEA first, tablet compass as backup). With a tablet-compass option, a panel shows the compass heading (true, and magnetic in brackets), the mounting rule, a **mounting offset** (−10°/−1°/+1°/+10°/0°) and a warning. The orange ⓘ **Risks and how it works** link under the three options opens the full explanation below, also inside the app.

**Which heading is used** — in order of priority:

| Heading source | 1st | 2nd | 3rd |
|---|---|---|---|
| *NMEA (HDT/HDG)* | HDT/HDG | heading from your own AIS transponder (VDO) | course over ground (COG) |
| *NMEA + tablet compass* | HDT/HDG | your AIS transponder's heading (VDO), **only if it is a real heading** (transponders send "not available" when no compass is connected, and the app then would only get a copy of the course) | tablet compass, when neither has arrived for **5 seconds** |
| *Tablet compass* | tablet compass only | — | — |

**AIS and the GPS / heading sources.** Your own AIS transponder (VDO sentences) does three things in the app: it detects your **MMSI** (so your boat is not shown as a target), your **boat name**, and it can supply your **position**, course, speed and heading. Other vessels (VDM sentences), collision alarms and CPA/TCPA work the same with every setting. What changes:

- **GPS Position = NMEA** or **NMEA + Device Fallback**: the position from your transponder is used, exactly as before.
- **GPS Position = Device GPS**: the position from your transponder is **ignored**, so the position always comes from the tablet (the boat GPS sentences RMC/GGA/GLL are ignored too in this mode). MMSI and name detection still work, and the transponder's heading is still used according to the heading source above.

> ⚠️ **Tablet compass — read before relying on it.**
> - **It is a backup, not a replacement for the boat compass.** The tablet's compass is a small magnetic sensor. Near the **engine, speakers, steel parts, batteries, chargers or power cables** it can be off by **tens of degrees**, and the error can change when the engine starts or the autopilot draws current. Always compare it with the boat compass before using it to steer or for collision avoidance.
> - **Mount it fixed and aligned with the boat.** Upright on a dashboard, the **back of the tablet must face the bow**; lying flat, the **top edge of the screen must face the bow**. If it cannot be aligned exactly, steer a steady course, compare with the boat compass and correct the difference with the **mounting offset**. Re-check whenever the tablet is moved.
> - **Calibrate it.** If the app says the compass needs calibration, move the tablet slowly in a figure-8 away from metal and electronics. A case with magnets (magnetic covers, mounts or chargers) makes the compass useless.
> - **True north needs a GPS position.** The app adds the magnetic declination for your position. Until a GPS position is available the heading shown is **magnetic**, and the panel says so.
> - **Heel and motion.** With strong heel, pounding or a tablet held in the hand, the reading becomes noisy; the app smooths it, which adds a short delay (about half a second).
> - **Everything that uses the heading uses this value**: the compass widget, the EssentialView gauge, heading-based wind calculations, the Maneuver widget and EssentialWeb.
> - **Wind on EssentialView, its wind widget and EssentialWeb.** Wind angles from the masthead sensor are measured relative to the boat. When the heading comes from the *Tablet compass* and the NMEA network also sends a boat heading (HDT/HDG), the app turns the wind by the difference between the two headings, so the wind stays fixed in the world: if the tablet turns, the wind marks, sails, genoa car and the AWA/TWA tiles change with it, while the true wind direction (TWD) stays the same. With no NMEA heading the app shows the sensor angles as they are; on the water they still change as soon as the boat turns. A wrong tablet compass (see above) therefore also shows the wind on the wrong side of the boat.

**Draft Calibration** — the distance from the waterline to the lowest point of the boat (keel and bulb). Many depth sounders already include a keel offset; if yours does, set this to 0. Otherwise enter your draft, and add about 5% if the boat is heavily loaded. Default is 1.0 m.

**Refresh Rate** — Fast (200 ms), Medium (500 ms, default) or Slow (1 s). Slower rates give smoother numbers and use less battery.

**Keep Screen On** — on by default. Recommended for cockpit use and essential for Anchor Watch.

**Language** — System Default or one of the seven languages.

**Close Application** — fully closes the app. (The Android Back button is disabled inside the app.)

The other cards:

**Units**: depth in meters, feet or fathoms; wind speed in knots, m/s or km/h; speed in knots or km/h. Every page, widget, alarm and EssentialWeb follow these units.

**Boat**: the **vessel name and MMSI** detected from your AIS transponder, **Draft Calibration** (above) and the **Depth alarms and offset** button, which opens the gear dialog of section 5.2; a line under it summarises the reference, the offset and the alarms now set.

**AIS**: **Boat name** and **Own MMSI**. Type them if your transponder does not send them; with the MMSI the app keeps your own boat off the list of AIS targets. The collision alarm settings are not here but in the shield or gear icon of EssentialAIS (section 6).

**App**: besides **Keep Screen On** and **Refresh Rate** it has:

- **Start Screen**: the page the app opens on (EssentialView by default; the list also offers NMEA, Design and Settings).
- **Export configuration** / **Import configuration**: save your settings (connections, units, vessel, AIS, EssentialView pages, camera) to a file and restore them, for example on a new tablet. Before anything is replaced you see a summary and confirm.
- **Save full backup** / **Restore full backup**: the same, plus **every closed LogBook log**, in one file.
- These four buttons need a licence; during the trial they open the plans screen.

**Subscription**: your licence or trial status, a switch for the daily trial reminders, **See the plans** / **Switch to lifetime** (section 10) and a **?** with a short explanation.

**Support**: **Device IP** (the tablet's address, to compare with the gateway's), the Android version, device model and app version, **Save Debug Report**, **Export NMEA data (last 12 h)** (section 9), the *Need help or found a bug?* steps (save a debug report, take a screenshot, send both to support@essentialsail.com) and **View** buttons for the **EULA**, the **Privacy Policy** and the **Open-source licences**.

Tap the **?** icons next to settings for a short explanation.

# 10. Trial, subscription and lifetime licence

## Free trial

- From the **first launch** you can use **all of EssentialSail for 15 days**: every page, every widget, Anchor Watch, AIS, MOB, camera and EssentialWeb. **No card and no commitment**: nothing is charged during or after the trial.
- Users of an earlier version who never bought a licence also get the 15-day trial, from the first launch of this version.
- From the second day, the first time you open the app each day a small card shows how many days are left, with **Continue the trial** and **See the plans**. You can switch these reminders off in the card or in **Settings → Subscription**.
- In the **last 24 hours**, if you start Anchor Watch, declare a MOB or switch on the AIS alarm, the app tells you the exact time the trial ends, because at that time the watch stops. This warning appears even with reminders switched off.

## When the trial ends

- At the exact end of the 15 days, if you have not chosen a plan, **all functions pause**: connections, EssentialView and widgets, EssentialAIS, Anchor Watch, MOB, EssentialCAM, EssentialWeb and NMEA recording. Only the plans screen is shown, at every start, until you buy.
- If a watch was running (anchor, AIS alarm or MOB), the plans screen shows a clearly visible message, with a short sound, saying that **the watch has been stopped**. Do not rely on the app after the trial has ended.
- **All your settings are kept** (EssentialView pages, widgets, connections, camera, AIS, anchor, vessel). As soon as you buy, the app continues exactly where it was, without restarting.

## The three licences

| Licence | Notes |
|---|---|
| **Monthly** | Ideal for the season or a charter; cancel whenever you like |
| **Annual** | A whole year on board; the screen shows how much you save compared with 12 months |

| Licence | Notes |
|---|---|
| **Lifetime** | One payment, no renewal; all features, forever, on all your Android devices with the same Google account |

- Prices are shown in your currency, as Google Play provides them.
- Buying needs an **internet connection**. Without one, the plans screen asks you to connect and reloads the prices by itself when the network is back.
- **Restore Purchases** finds a licence bought with the same Google account (after reinstalling or on a new device).
- Subscriptions renew automatically; you can cancel them in Google Play → Subscriptions.
- If a payment is **pending**, the app shows "Payment in progress" and unlocks as soon as Google Play confirms it.
- Existing subscribers can **switch to lifetime** from Settings → Subscription. Monthly and annual are separate subscriptions, so after switching the app guides you to Google Play to cancel the old one.
- A licence keeps working **without internet**: lifetime always, a subscription for its last verified period plus 30 days. After that, the app asks you once to **connect to the internet to verify your subscription** (it does not ask you to pay again).

### Why date and time must be automatic

The trial is measured in days, with the device clock. To keep it fair for everyone, during the trial the app compares the device time with reliable sources (the GPS, the boat's NMEA time and our server). If the date or time seem wrong, the app pauses and shows **"Check date and time"** (the device date and time do not seem correct):
1. Tap **Open date and time settings**.
2. Turn on **Automatic date and time** (and automatic time zone).
3. Go back to the app and tap **Retry**. The app resumes by itself as soon as the time is correct.

Changing time zone or summer time is not a problem. This check never applies once you have a licence.

### Your data

During the trial only, the app sends our server a non-reversible code derived from the device identifier, the trial start date and the app version, to allow one trial per device. No personal data is sent. Details in the Privacy Policy (Settings → Support).

**OEM / head-unit version.** The OEM build has no billing: it is always fully unlocked, with no trial, no reminders, no pause and no plans screen. Export and import of the configuration are always available.

## 11. Troubleshooting

| Symptom | What to check |
|---|---|
| **Won't connect** | Is the device on the gateway's Wi-Fi? Are IP and port correct (Settings shows your device IP for comparison)? Try TCP vs UDP as your gateway expects. Some phones switch to mobile data when the Wi-Fi has no internet — turn off "smart network switch" or mobile data. |
| **Connected, but all** `---` | Open the **NMEA** page. If sentences scroll, the data is arriving: check that the instrument actually sends depth/wind/speed sentences and that the right Speed/True Wind source is selected. If nothing scrolls, the gateway is not sending to this port. |
| **"Instruments disconnected" banner** | The link is up but no data for 10+ seconds. Check the gateway and the instrument bus. |

| Symptom | What to check |
|---|---|
| **No AIS targets** | AIS receiver connected to the multiplexer? Own GPS valid? Range zoomed in too far? |
| **AIS shows my own boat** | Enter your MMSI in Settings → AIS, or let it auto-detect from your transponder. |
| **Anchor Watch says "Waiting for GPS"** | Set GPS Position to *Device GPS* or *NMEA + Fallback*, grant the location permission, and go outside/near a window. |
| **Device GPS selected but no position** | Read the device GPS panel in Settings (or the **Device GPS** card on the Diagnostics page): it says whether the permission is missing, Location is off in Android, the device has no GPS receiver, or it is still searching for satellites (needs open sky). |
| **Testing with the EssentialSail simulator: AIS targets off the radar, no collision alarm, anchor drag or MOB not working, speed 0** | The simulator invents a whole boat (position, heading, speed, wind). Set Settings → Data Sources to NMEA: GPS Position **NMEA Network**, Heading **NMEA (HDT/HDG)**, Speed Source **NMEA GPS (SOG)** or **Boat Log (STW)**, True Wind **Instrument**. With **Device GPS** the app uses the tablet's real position and speed, far from the simulated boat. Set the sources back for use on board. Details: simulator guide §4. |
| **Heading doesn't change when I turn the tablet** | With *NMEA (HDT/HDG)* the heading comes only from the boat's instruments, and GPS course only changes when the boat moves. To use the tablet's own compass, set Settings → Data Sources → **Heading** to *Tablet compass* (read the warning above first). |
| **Tablet compass heading is wrong** | Check the mounting (back of tablet or top edge towards the bow), calibrate with a figure-8, move the tablet away from metal/electronics, then set the mounting offset against the boat compass. |
| **Wrong depth** | Check the Draft Calibration value against your sounder's keel offset. |
| **Camera black or "Connection Failed"** | Check IP, port, username/password and RTSP path; try Force TCP; make sure the camera is on the same network. |
| **Plans screen appears though you paid** | Tap **Restore Purchases** and check you are signed in to the right Google account. |
| **"Check date and time"** | Turn on Automatic date and time in the Android settings, then tap Retry (section 10). |
| **"Your trial has ended"** | The 15 days are over and all functions are paused. Choose a plan (internet needed); your settings are kept. |
| **"Payment in progress"** | Google Play has not confirmed the payment yet. Wait, then tap Retry; the app unlocks by itself once it is confirmed. |
| **"Connect to the internet to verify your subscription"** | Your subscription has not been checked for a long time while offline. Connect once (marina Wi-Fi or mobile data) and tap Retry. |
| **Screen turns off** | Switch on Keep Screen On. |

## Contacting support

1. Settings → Support → **Save Debug Report** and share the file.
2. Take a screenshot of the problem.
3. Send both to **support@essentialsail.com**.

With a licence, **Export configuration** (Settings → App) saves your settings (connections, units, vessel, AIS, EssentialView pages, camera) as a JSON file, and **Import configuration** loads such a file back: the app checks the file, shows a summary and asks for confirmation before replacing anything. An invalid file changes nothing. Files exported by version 1.58 can be imported too. During the trial both items show "Available with a licence".

# 12. Technical reference

**NMEA 0183 sentences understood**

| Data | Sentences |
|---|---|
| Depth | DBT, DPT |
| Wind | MWV (preferred), VWR, VWT, MWD (legacy sources are used only if MWV is absent) |
| Speed | RMC, VTG, VHW |
| Position | GGA, RMC |
| Heading | HDT, HDG (or the device compass, see Settings → Heading) |
| AIS | VDM (other vessels), VDO (own vessel); Class A (types 1–3, 5) and Class B (18, 19, 24) |

**NMEA 2000** is supported through a gateway that outputs NMEA 0183.

**Permissions used:** Internet and network state (reaching the gateway, Google Play and, during the trial only, the trial server), Wi-Fi state, location (device GPS), wake lock (keep screen on). The device compass uses the motion sensors, which need no permission. The app shows no ads and uses no analytics; settings are stored on the device. During the trial only, a non-reversible device code, the trial start date and the app version are sent to essentialsail.com to allow one trial per device. Read the in-app **EULA** and **Privacy Policy** in Settings → Support. The privacy policy is also available online: https://essentialsail.com/privacy

**Requirements:** Android 8.0 (API 26) or newer. Works on phones, tablets and Android Automotive head units.

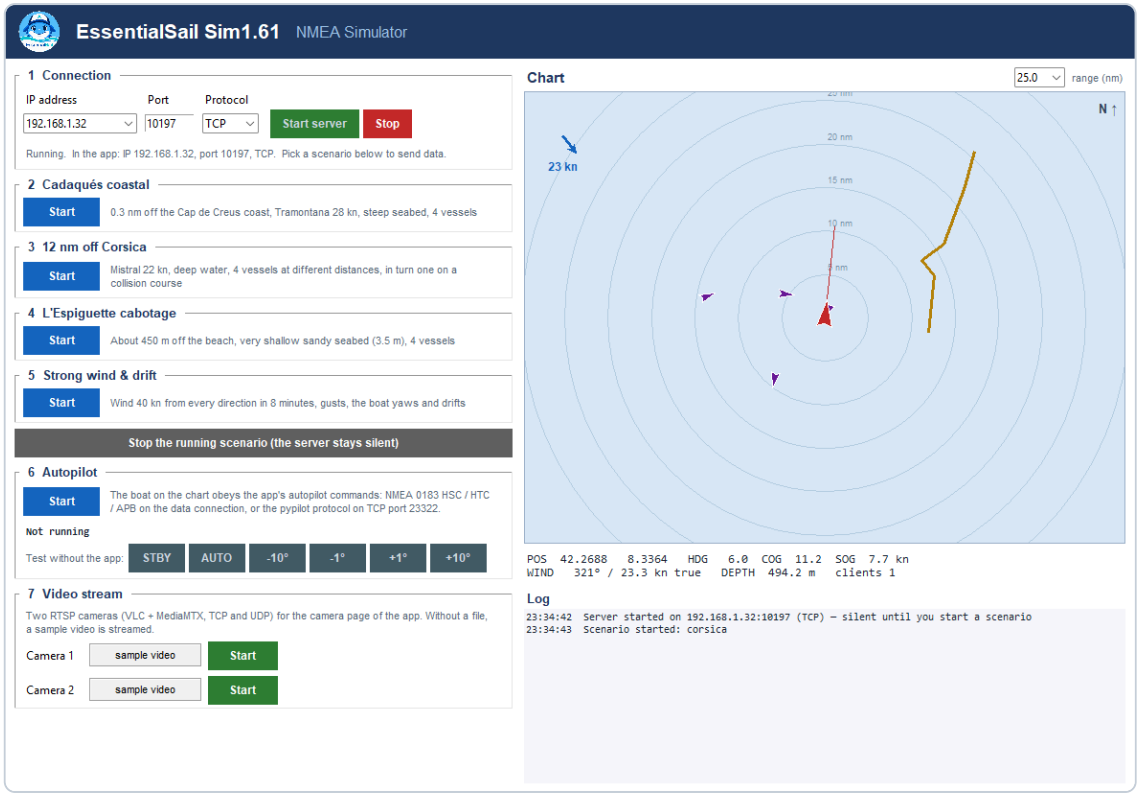
# 13. Try the app without a boat: the Sim1.61 simulator

**Sim1.61** is a free desktop program (Windows, macOS, Linux) that plays the part of your boat's instruments and Wi-Fi gateway. It sends wind, depth, speed, GPS position, AIS traffic and test scenarios to the app exactly like a real NMEA gateway. Use it to learn the app at home, to check that your settings are right, and to rehearse the alarms safely before you rely on them at sea.

Download it from **https://essentialsail.com/simulator**: one zip file with the program and an illustrated **PDF guide** (how it works, how to connect and test EssentialSail). The simulator's own screen is in English.

## 13.1 Install and start

1. Install **Python 3.9 or newer** from python.org. On Windows tick **"Add python.exe to PATH"** during setup. On Linux also install Tkinter ( `sudo apt install python3-tk` ). Nothing else is needed. For the video section install **VLC**.
2. Unzip the simulator. On Windows double-click **Start_Simulator.bat**; on macOS and Linux open a terminal in the folder and run `python3 nmea_simulator_gui.py` .




The simulator window: 1 Connection, scenarios 2 to 5, 6 Autopilot, 7 Video stream, and the chart that follows the boat.

## 13.2 Connect the app to the simulator

1. Put the computer and the phone or tablet on the **same Wi-Fi network**. (On an Android emulator use the address `10.0.2.2` instead.)
2. In the simulator choose the **IP address**, the port (**10111** by default) and **TCP**, then click **Start server**. The line under the buttons tells you what to type in the app. The server starts *silent*: it sends nothing until you start a scenario.
3. In the app open **Settings → Connections**, enter that IP address and port, choose **TCP** and tap **Connect**. The status turns to *connected*. The first time, your computer's firewall may ask to allow Python: allow it.

**Then make the app read everything from the simulator, not from the tablet.** In **Settings → Data Sources**:

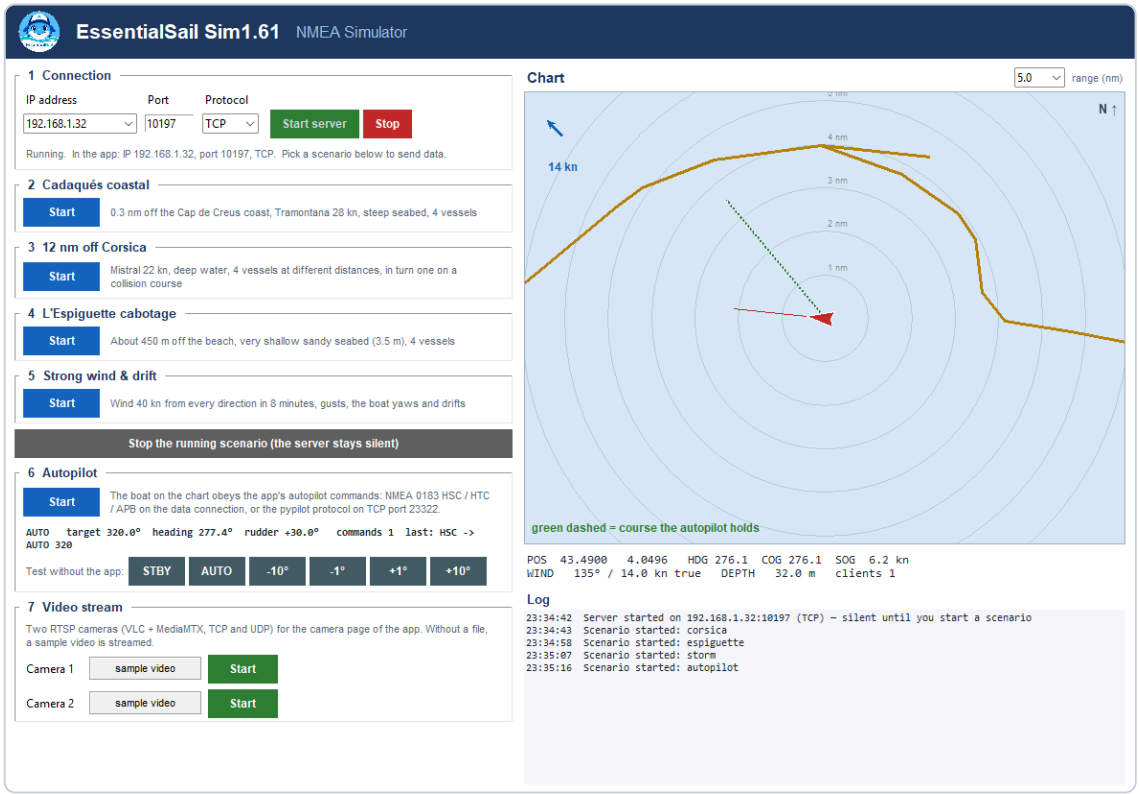
| Setting | Choose |
|---|---|
| **GPS Position** | **NMEA Network** |
| **Heading** | **NMEA (HDT/HDG)** |
| **Speed Source** | **NMEA GPS (SOG)** or **Boat Log (STW)** |
| **True Wind Calculation** | **Instrument (MWV/VWT)** |

The simulator invents a whole boat, with its own position, heading, speed and wind. With the tablet's own GPS or compass selected, the app would never see it. Set the sources back (for example to *Device GPS*) when you use the app on board without an NMEA GPS. Finally switch **EssentialAIS** (and **EssentialCAM**) on in **Design → Visible Screens**, and press **Start** on a scenario: the values appear in the app within a few seconds.

## 13.3 What to try

The simulator has **seven sections**. Only one scenario runs at a time: starting a new one stops the previous one, and **Stop the running scenario** makes the simulator silent again while the app stays connected. Your own boat is sent as AIS (MMSI 227 777 777, CERRONE) and every vessel sends its type, so the radar shows the vessel type icons.

| In the simulator | What to check in the app |
|---|---|
| **2 Cadaqués coastal** | A trip along the real coast of Cap de Creus, 0.3 nm off it, Tramontana 28 kn, a steep seabed and four vessels. Switch **Coast** on in EssentialAIS to see the coast under the vessels; start a log in **EssentialLogBook**. |
| **3 12 nm off Corsica** | Mistral 22 kn, deep water, four vessels. **Every 2.5 minutes one vessel comes on a collision course**: it turns red with a ring and the alarm sounds. Try zoom, move, tap a vessel for its details, **Mute** and **Snooze 5min**. |
| **4 L'Espiguette cabotage** | 450 m off a flat beach: the depth falls to 3.5 m and less. With a draft set in **Settings → Boat** the clearance turns amber under 1.5 m and red under 0.5 m. |
| **5 Strong wind & drift** | Wind 40 kn gusting 50 that goes round the compass in 8 minutes, a yawing boat that drifts. Watch the wind gauge, the sails and the wind streaks of EssentialView. |
| **6 Autopilot (BETA)** | The boat on the chart obeys NMEA 0183 `HSC` / `HTC` / `APB` or the **pypilot** protocol (TCP 23322). **The autopilot is a BETA feature**, still under development: never rely on it to steer a real boat. The app does not send autopilot commands yet: use the test buttons of the simulator. |
| **7 Video stream** | Two RTSP cameras, `rtsp://<ip>:8554/cam1` and `/cam2`, for the **EssentialCAM** page (needs VLC; the simulator downloads the MediaMTX server the first time you press Start). |




Autopilot section: mode, target, heading, rudder and the last command received.

## 13.4 If the app does not connect

- Computer and tablet must be on the same network, and the app must use the IP address and port shown in the simulator window.
- Allow Python through the computer's firewall on a private network.
- A freshly started server is **silent**: press **Start** on a scenario.
- The simulator refuses a port that is already in use: close any other simulator or choose another port.
- When you have finished, click **Stop** and close the window: nothing stays installed on the computer.
- The depth in the scenarios is approximate and for testing only: never use it for navigation.