

General

The app works on the basis of a publication by Carl Friedrich Gauß and is the only known method that delivers a mathematically exact result. In contrast to other methods, the own location does not have to be estimated beforehand.

The app is only suitable for navigation with the sun. A change in location between the observations can be recorded with an integrated dead reckoning module.

In order that the recorded data can be used for the calculation of the position, the precise altitude difference method by Cornelis Douwes was used into the calculations.

Despite high mathematical precision, location accuracy is primarily determined by the ability of the navigator to use the sextant and clock measuring devices correctly.

Settings

TEST MODE: By selecting the test mode, any constellations can be examined. A location is calculated when the data entered is valid. Only the Specify function is available in the Dead Reckoning mode. A running navigation is not interrupted by the test mode. Both can be used in parallel.

Approximate latitude: Tap on the number and enter your estimated latitude with the control wheels. Note that two overlapping circles of position intersect in two places. An entered latitude north of the declination leads to the calculation of the northern intersection. An entered latitude south of the declination leads to the calculation of the southern intersection.

Eye level: Enter the vertical distance between your sextant's telescope and the horizon. In the case of high waves, take your observation on the top of a wave crest if possible.

Sun at: Specify here whether you want to put the sun on the horizon line with the top or bottom limb.

Sextant index correction: Tap on the number and enter the required index correction for your sextant. Choose "-" if the index error is positive and select "+" if the index error is negative.

Plastic sextant: Activate this switch if you use a plastic sextant. With this, the index error is more temperature-dependent. It is then possible to carry out the index error correction for each observation directly in the Observations menu. A positive error is corrected by a negative entry and vice versa. The index error must be determined immediately before or after an observation.

Observations

Circle of Position 1: You can choose between Circle of Position 1 or Noon Latitude. Choose Noon Latitude if you want a location based on the midday latitude.

Date entry: The date of the first observation cannot be changed (exception in test mode).

Time: Enter the exact second of completion of observing the sun. If Noon Latitude is selected, the time is entered to the minute.

Sextant reading: Enter the altitude of the sun read on the Arc and micrometer-drum of the sextant.

Index correction: When using a plastic sextant, you have to perform an index correction immediately before or after an observation. To do this, tap the small number and enter the

correction value. This measure makes it easier to compensate for the usually greater temperature dependence of plastic sextants.

Active: Activate your inputted data by turning the switch to green. After that, changes are only possible by completely re-entering all data. If data is active under Circle of Position 2, then it can be transferred.

By activating the data, the circle of position is displayed in green on the 3D globe. The app automatically switches to the Dead Reckoning menu to record the upcoming change of location until the second observation.

Circle of Position 2: You can choose between Circle of Position 2 or Noon Latitude. Choose Noon Latitude if you want a location based on the midday latitude.

Date entry: The date cannot be changed manually (exception in test mode).

Time: Enter the exact second of completion of observing the sun. If Noon Latitude is selected, the time is entered to the minute.

Sextant reading: Enter the elevation angle read on the Arc and micrometer-drum of the sextant.

Index correction: When using a plastic sextant, you need to perform an index correction immediately before or after an observation. To do this, tap the small number and enter the correction value. This measure makes it easier to compensate for the usually greater temperature dependence of plastic sextants.

Active: Activate your inputted data by turning the switch to green. You can perform and activate as many second observations as you like, for example every hour or as required. A second observation is also possible on the following days. The larger changes in location over days lead to location deviations if dead reckoning is not carried out exactly.

Result: After each activation, the ship's location is calculated according to the entered data and displayed as last position. The DR position is displayed by adding or subtracting the longitudes and latitudes crossed as a result of a change in location and is recalculated after every minute. The way in which a change of location should be considered must be set in the Dead Reckoning menu. Dead reckoning is only stopped after deactivating Circle of Position 1.

Note: The settings for a second observation can only be changed after the active switch in the observation menu is set to gray. This could be necessary, for example, if the lower edge of the sun is covered by clouds and the observation has to be switched to the upper edge.

Dead Reckoning

Reckoning: Select this function if you want to carry out a precise calculation of the change in location between the observations. This type of calculation is not available in test mode.

Specify: Select this function if you want to manually enter the distance and the sailed course between the first observation to a second observation.

Add new leg: After a sustainable change in speed, after a course change, after a tack or jibe, the data for speed and / or course are entered and confirmed with use the data. They can still be corrected afterwards. Tapping ADD adds a new leg to a log board.

Log board: Each intended entry in the Reckoning mode creates a new line in the Log

board. From the sum of all entries, a sailing vector consisting of an distance made good and an course made good is calculated. This sailing vector is used for the location calculation after every second observation. The log board is deleted when the first observation is deactivated.

Display

Graphic: The first circle of position is shown as a green circle on the display. If the ship changes its position, this circle will be larger (or smaller) because the old position of the sun at the time of the first observation is then observed from another location. After changing the position, the circle of position of the first observation is shown in a green dashed line.

The circle of position 2 is shown as a red circle. Possible locations are the intersections between the green and red circle. Whether the northern or southern intersection should be right as the location is selected by entering a proximate latitude in the settings. Changes in location are only visible from a certain zoom level as a blue line from the starting point to the location. A further change in the location of the sailing route is shown as a blue dashed line.

Data output: On top in the middle of the display the sailed distance made good and course made good (DMG & CMG) are output and updated every minute.

In the line below the ships midday time is displayed. This time is only available after a second observation.

Nautical information on each observation is displayed at the top right and left.

At the bottom left, the ship position at the time at the last observation is shown with Last position and DR position at the current time.

Distance measurement

In any function, tap “<” in the top left and activate **Measuring**. Crosshairs will appear in the middle of the display. The start course and orthodroms distance in nautical miles from your last location to this destination are displayed.

Download Maps

The **Download maps** function enables higher-resolution maps to be loaded. You can save your sailing area or your target area online and use it offline.

All areas that are searched in online mode in very high zoom resolution are retained in offline mode.