



ELENA NAVIC HANDHELD NAVIGATOR USER MANUAL

ELMN-EHHN-URML-40

ELENA GEO TECH PRIVATE LIMITED

7, 1st Cross, 2nd Main, Ganganagar, RT Nagar, Bengaluru 560032, India

✉ info@elenageo.com ✉ sales@elenageo.com 🌐 www.elenageo.com

☎ +91 9384864411 ☎ +91 9384864422

ISO 9001: 2015 Certified Company

USER MANUAL

Please read this user manual to know how to use the Navigator software application.

Product:	Elena NavIC Handheld Navigator
Part No:	ELNHHN

February 2025

Ver 4.0

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ELENA GEO TECH

New No 7, 1st Cross, 2nd Main,
Ganganagar, Bengaluru - 560032, India
info@elenageo.com, sales@elenageo.com
+91 9384864411, +91 9384864422

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This document has 40 pages, numbered serially from 01 to 40.

Date: ___ Feb 2025

Lt Col V S Velan

Place: Bengaluru, India

Chief Technology Officer

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WARNING



Ensure the product is charged for a minimum of two hours before switching it on.



Do not disassemble, repair, or modify the product on your own for any reason. In case there is any issue in its working, contact customer care. We will be happy to help!



No installation of any kind is required. Use the product as received.



This product uses NavIC satellites to show a location using PNT technology. The data is saved locally in the device. Depending on the variant for defense and civil, the device may have a SIM inside for external communication.

MAINTENANCE GUIDELINES

1. Safekeeping

- (a) Store the device in the protective case supplied with it when not in use in potentially hazardous environments.
- (b) Keep the accessories in the pouch for protection.
- (c) Turn off the device while not in use.

2. Device Charging

- (a) Charge the device for at least two hours before using it.
- (b) Charge the device whenever the charge indicator shows 50% or less.
- (c) Do not overcharge the device (for longer than 8 hours) to prevent malfunction and poor battery performance over time.
- (d) Once charging is finished, close the cable ports with the rubber case (cap).
- (e) Always use the charger that came with the device to charge it. Avoid using different chargers.

3. Precautionary Measures

- (a) Do not place the device and related accessories on wet surfaces.

- (b) Always ensure that the device's seals are intact and the ports are properly closed before using the device in all environments where water exposure is possible.
- (c) Avoid prolonged water immersion, especially in depths greater than the recommended limits.
- (d) Never attempt to tamper with the device casing under any circumstances, as this could cause further damage and void the warranty.

4. Actions in case of Water Exposure

- (a) Immediately power off the device and disconnect it from any power sources.
- (b) Dry the device using a soft cloth and allow it to air dry completely for at least 24 hours before attempting to power it on.
- (c) If the device shows any signs of malfunction after exposure, please contact our support team for further assistance.

5. Best Usage Techniques

- (a) Keep the device open to/pointed toward the sky to acquire the satellite fix.
- (b) Refer to the user manual for detailed instructions on operating the device.

For any assistance, please contact our service support at +91 6366229433.

GENERAL INFORMATION

1. About ELENA

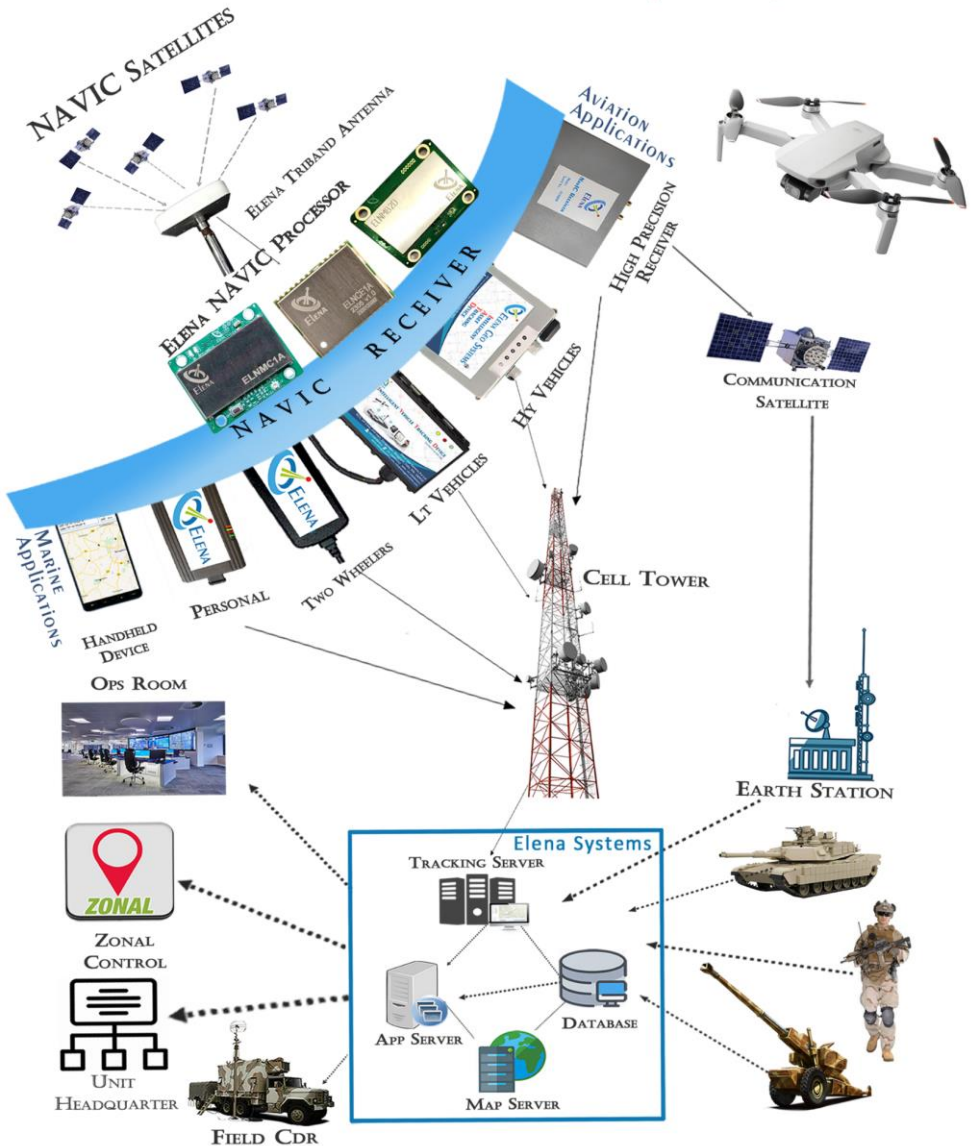
Specialist in NavIC

Elena Geo (“Elena”) was founded by Lt Col V S Velan in 2012 to cater to the niche segment of NavIC-based Monitoring Solutions. Elena’s latest NavIC processor/chip ELNCE1A, using 12-nm technology, was launched in April 2023. It has a small form factor that can receive and process signals of NavIC (IRNSS), GAGAN, GPS, and GLONASS. Elena has all the indigenised hardware and software required for multi-GNSS (including NavIC) Positioning, Navigation, and Timing, giving the advantage of rapid customisation and retro-fitting as required. Elena demonstrated its first processor in April 2019. (NavIC is the operational name of IRNSS.)

Elena endeavours to generate awareness regarding the predominant advantages of NavIC by participating in various conferences, conclaves, meetings, and seminars at the national level such as the Indian Defence Conclave, Aero India, Army Technology Nodes, G20 DIA, etc.

Elena has been a technical and industrial partner to organizations like TCOE India, 3GPP, RTCM, ISpA, SIDM, MCCIA, etc. It also has academic collaborations with several reputed educational institutions in India to achieve research and technological excellence in the field of GNSS, in particular, NavIC. To its credit are several awards honouring Elena for its contribution to NavIC. It received the Excellence Award from Indian Space Conclave 2023 and Pandit Deendayal Upadhyaya Telecom Excellence Award 2023. The founder and CTO of Elena Geo received the prestigious ‘Igor I Sikorsky’ Award for technical excellence.



2. ELENA'S END-TO-END PRESENCE IN NAVIC DOMAIN



3. About NavIC








NavIC, Navigation with Indian Constellation is a Global Navigation Satellite System which is the third system in the world to give location services and the best of its kind in providing accurate, reliable data all round the clock without any break. This

	GPS	NavIC
Differentiating Parameters		
India Coverage (24 Hr. Cycle)	Loss in coverage	No Loss in coverage ✓
Satellite Position	Circular MEO Orbit ✗	Geosynchronous Geostationary ✓
Orbit Height	Lower ✗	Higher ✓
Frequency	Single Available ✗	Dual ✓
Accuracy	Very Low ✗	< 6 Meters ✓

MEO - Medium Earth Orbit

Advantages of NavIC when compared with GPS

- ✓  NavIC provides permanent visibility over the Indian Subcontinent and is much more accurate than GPS
- ✓  NavIC works in crowded locations with highest accuracy, both over Indian cities and rural areas
- ✓  Unlike GPS, NavIC does not loose coverage of equatorial region from 20 minute to 180 minute in a 24-hour cycle
- ✓  NavIC enables GoI to save Forex by eliminating the payment made to foreign navigation service providers
- ✓  NavIC provides GoI self-dependence without relying on foreign nations that shy away to help in a crisis

system has been fully functional since June 2019. Currently, 11 navigation satellites can be used by the public for an efficient monitoring application.

Elena works only in this niche segment.

Of NavIC, By NavIC, For NavIC

4. HANDHELD NAVIGATOR: DEVICE

The Elena Handheld Navigator is developed through indigenous R&D.

Field testing and trials of this product have been done all around India. It is also field tested and approved by Infantry School, Mhow.

It uses NavIC satellites for Positioning and shows the location. This feature can be used for patrolling, movement by road, deployment, gathering activities, or situational reports. This can be configured to work along with tactical Communication, Command, Computers, and Intelligence (Tac C3I) systems.

Powered by advanced technology and built with utmost precision, the EHHN offers an exceptional user experience. It combines the power of multi-GNSS reception, including NavIC (IRNSS) (L5 Band), GPS (L1), GLONASS (L1), and SBAS, ensuring robust & accurate positioning in diverse environments.

This product development was partially funded as a grant from DoT. Elena conceived and developed this Handheld Navigator as part of a project titled "NavIC Navigator using 5G Networks" under the DCIS scheme sponsored by DoT in 2022-23.

5. HANDHELD NAVIGATOR: DEVICE PARTS



Figure 1 Handheld Navigator



USER MANUAL

6. HANDHELD NAVIGATOR: FEATURES

The Elena NavIC Handheld Navigator Application offers the following key features:

- View own location on ESM or DSM
- Creating and managing waypoints
- Creating routes and tracks
- Navigating to a waypoint
- Selecting map sheets
- Area Calculation
- Satellite Info & Sky View Plot
- Sun/Moon Info


7. PREREQUISITE ACTIONS BEFORE USE

Long-press the switch on the right side of the device to switch it on. The Navigator application will be launched automatically.

(a) Bluetooth Connectivity

Ensure a Bluetooth connection is established when the device is switched on. This is indicated by a 'Green dot' at the top right corner. Otherwise, a 'Red dot' is shown.

(b) Map

Upload maps by tapping on the Map sheets icon . The maps are uploaded to the device using a file manager. The

user selects the required map by tapping on the checkbox. A user can set Lat Long format, Speed unit, Map rotate, Compass on the map, and Altitude in the **Map Screen** Settings page.

Note: The user will need to upload the DSM map of the area into the Handheld Navigator device before using it. To know the procedure, kindly contact Tech Support.

(c) **Satellite Fix**

Ensure a satellite fix is available (that will display the location marker in blue). The device should be used under open sky.

8. Application Software

The Elena NavIC Handheld Navigator Software Application installed in the device allows users to view their current location and monitor their progress as they move. It can display the position coordinates in terms of Latitude, and Longitude in DD:MM:SS.SS format. It follows the military grade Reference System in 6, 8, and 10-digit GR and the World Geodetic System (WGS-84) to display the position coordinates.

8.1 This application has the following pages



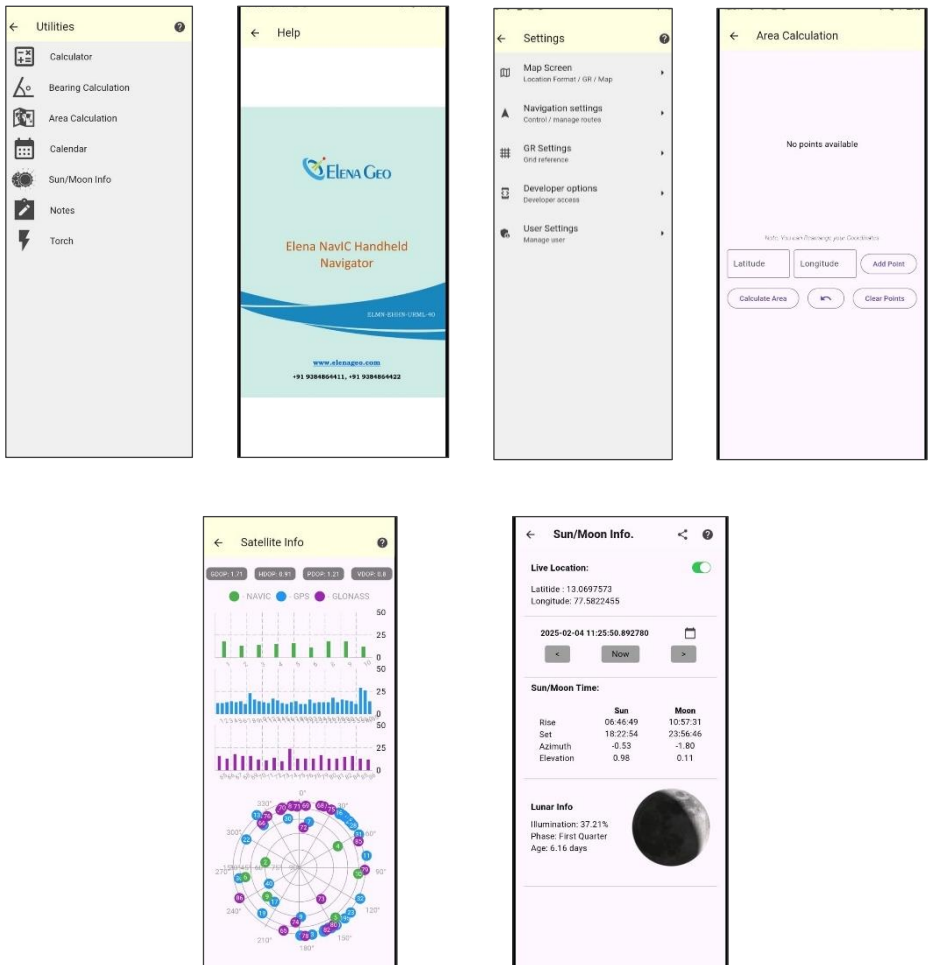













Figure 2 Pages of Software







All the pages have been explained in the next sections.

8.2 Conventions/Icons used in the software

Menu Icons	Menu Names	Description/Actions
	Navigation	Stop Navigation, Clear Track
	Waypoints	Create Waypoints, Routes, Import/Export
	Satellite	Satellite information
	Route	Create Routes
	Tracking	Create Tracks
	Compass	Know direction, Calibrate accuracy
	Utilities	Calculator, Bearing Calculation, Area Calculation, Calendar, Sun/Moon Info, Notes, Torch
	Settings	Map Screen settings, Navigation settings, GR settings, User settings, Brightness
	Help	This User Manual
	Logout	Logout the application

	Reboot	Reboot the application/device
	Shutdown	Shut the application down

Icons shown on the home page:

Icons	Description
	Bluetooth Connectivity <i>Available or Not available</i>
	Battery Charge indicator
	Map sheets
	Location Marker / Satellite Fix availability
	No Satellite Fix
	Point Current location

8.3 Login Page

Upon starting the device, a login page is displayed. The user selects the username as “Admin” in the dropdown and enters the password as “admin1234” in the enter password text field. Tap on the login button to get to the home page.

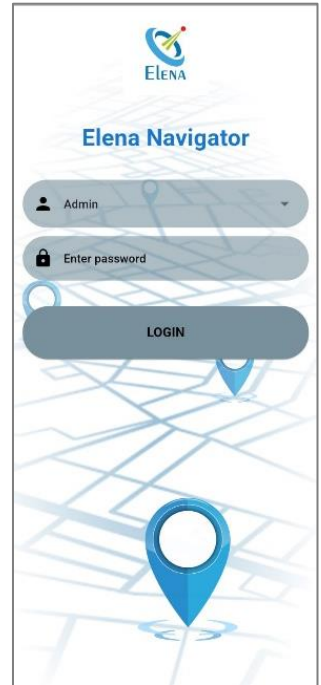


Figure 3 Login Page

8.4 Home Page and Menu Pages

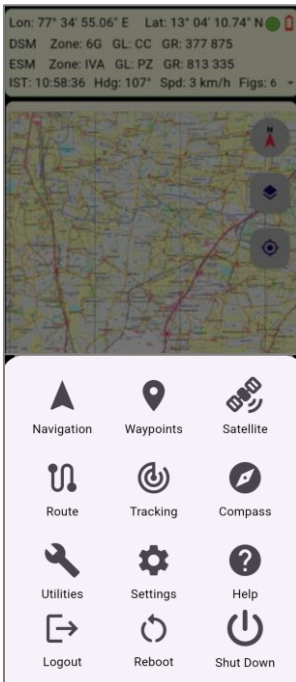


Figure 4 Home Page and Menu Pages

The application has the following menu pages at the centre-bottom of the home page:

8.5 Information on Home Page

(a) **Top Box**

Displays values of Latitude, Longitude, DSM, and ESM Grid parameters, Time in IST, Heading, Speed of movement, and GR Figures. Battery charge is also shown; long press the icon to know the charge in percentage.

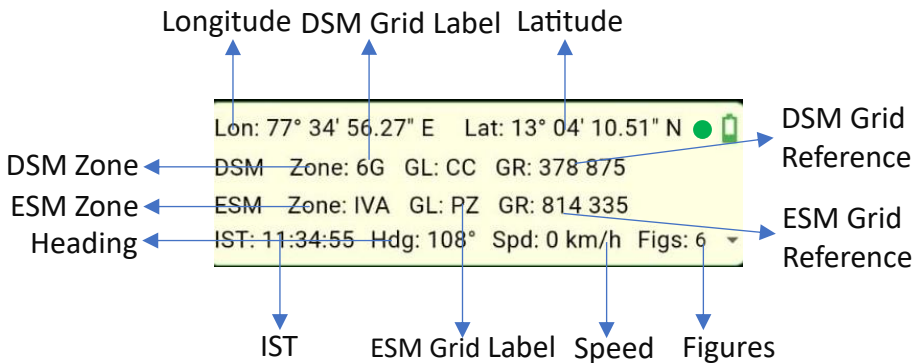


Figure 5 Information on Home Page: Top Box

(b) **Location Marker**

The location marker icon is shown in blue colour at the centre if there is a fix and shown in grey colour if there is no fix available

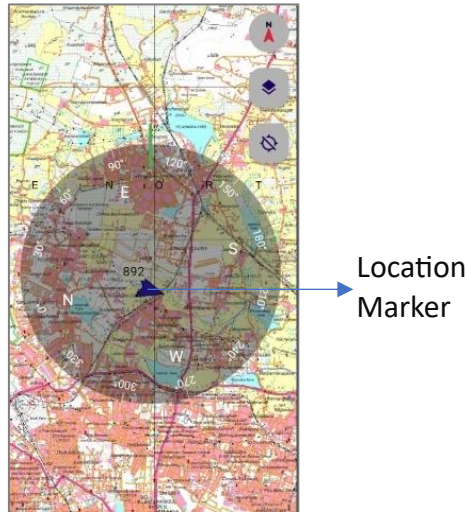


Figure 6 Information on Home Page: Location Marker

(c) **Bottom Box**

Displays the zoom level of the map, height view (distance of the current view of the visible map), scale view, and map scale.

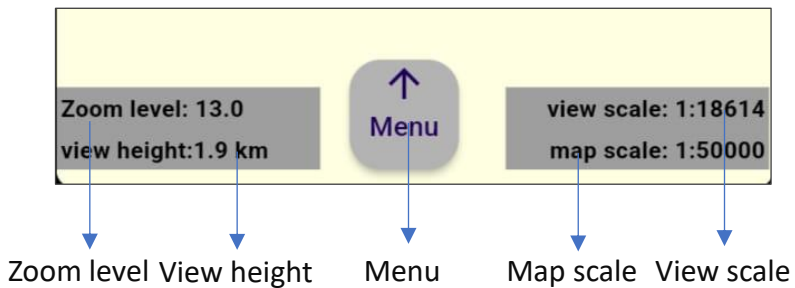


Figure 7 Information on Home Page: Bottom Box

9. MOVING WITH THE NAVIGATOR

9.1 Creating Waypoints

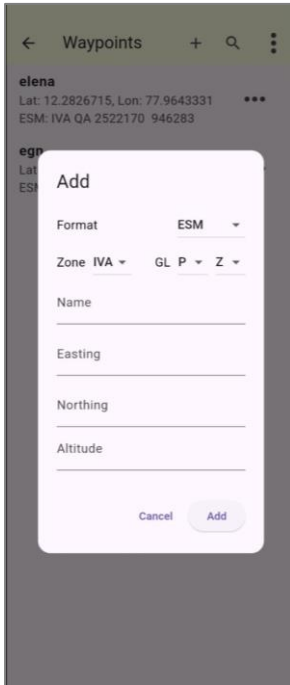


Figure 8 Add Waypoint

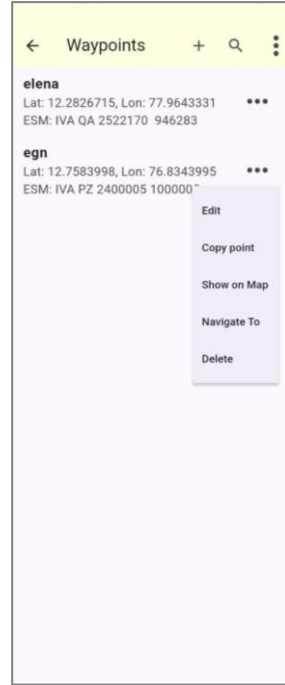


Figure 9 Saved Waypoints

A waypoint is created through the **Waypoints** menu by tapping '+'.

In the **Add Waypoint** dialog box, the user can select the map format in DSM, ESM, LAT LON, Zone, and GL from the dropdown menu. Provide a name to the waypoint and values for Easting, Northing, and Altitude parameters. Tap **Add**.

A user can edit, copy, visualize, navigate to, and delete the waypoint by tapping on **...** menu and selecting the appropriate option.

A user can also create a route by tapping on **⋮** at the top right corner and selecting **Create Route**.

9.2 Navigating to a Waypoint

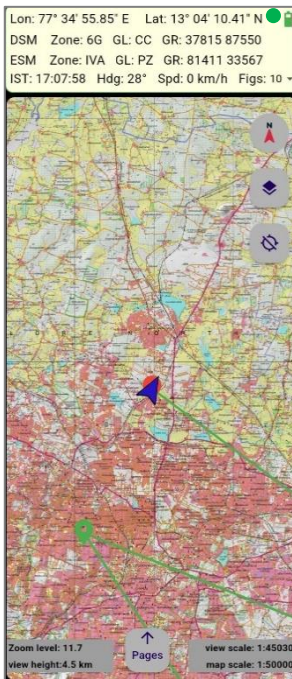


Figure 10
Navigation to
Waypoints

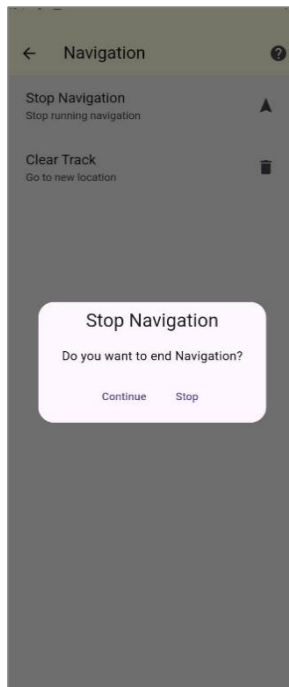
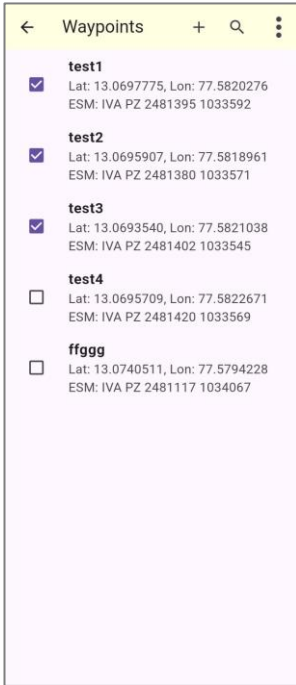


Figure 11 Stop
Navigation

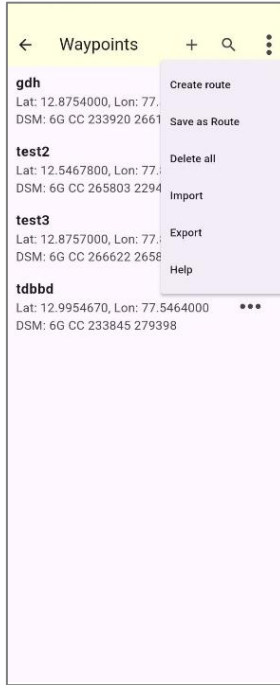
A user can navigate to a desired waypoint by tapping on the **...** menu of a waypoint and selecting **Navigate To** option. The navigation path from the current location to the waypoint is shown on the map. It also displays the *Bearing* and *Distance* to the waypoint. To stop navigation, tap **Stop navigation** through the

Navigation menu. Tap on the **Show on Map** button to see the waypoint on the map.

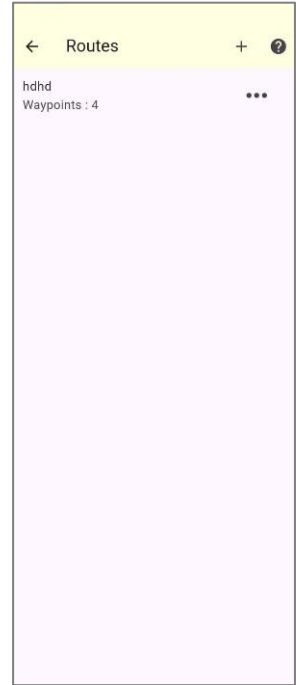
9.3 Route



*Figure 12 Route
Creation*



*Figure 13 Stop
Route Creation*



*Figure 14 Saved
Routes*

A route must first be created from the **Waypoints** page. Tap the three-dot menu, select **Create route**, select waypoints (a minimum of two), and select **Save as Route** to save the route with a name. When saving the route, the user has the option to reorder the waypoints by long-pressing the waypoint handle and dragging up or down the order. Creating a route can be stopped or exited by selecting the **Stop route creation** option.

The user can then initiate navigation through the chosen route by tapping **Start Navigation**. Bearing and distance

are displayed at the bottom of the page. Tap **Stop Navigation** on the **Navigation** menu to end the navigation.

A route can be shown on the map by tapping on the **Show on Map** option located under the three-dot menu.

9.4 [Tracking](#)

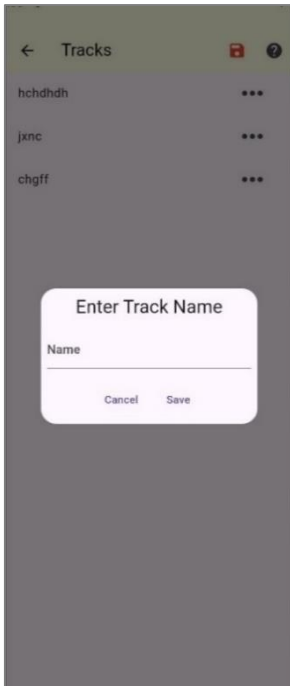


Figure 15 Tracking

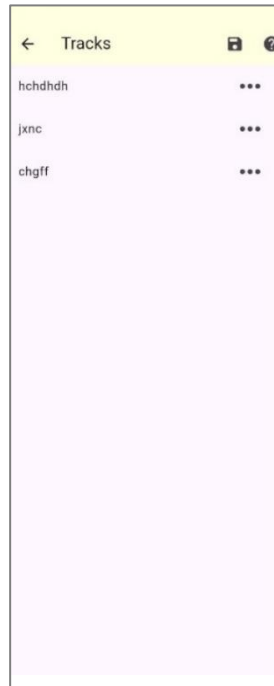



Figure 16 Saved Tracks

Before creating tracks, the user should upload a map sheet corresponding to the area. The track shown is based on the map of the area. Recording of a track is started by tapping the Track icon  and saving the track by giving a name. The tracking of the route starts as the user moves. The Lat

and Long values of the route are captured automatically. Tap the Track icon again to stop the tracking. The track is saved, added to the list of saved tracks, and displayed on the **Tracks** page. For a given track, tap on the menu (...) and tap **Show on Map** to see the track on the map. A user can view the detailed information and visualization of the track by choosing a specific track. **Delete** the track if not needed.

9.5 Compass



Compass is viewed by tapping the Compass menu. It displays a compass with heading and accuracy status.

When the location marker on the map turns red or the accuracy is shown as low or medium on the Compass page, the compass needs calibration. Move the device in a figure-8 motion as shown in the image to calibrate the compass. A high calibration ensures accurate navigation.

The compass can be viewed on the map by enabling the option on Map Screen settings.

Figure 17 Compass

9.6 Satellite Info and Sky View Plot

It displays the Signal-to-Noise Ratio (SNR), which indicates the quality and strength of the satellite signals received in real time. Higher SNR values generally indicate stronger and more reliable signals, while lower values may suggest weaker or intermittent reception.

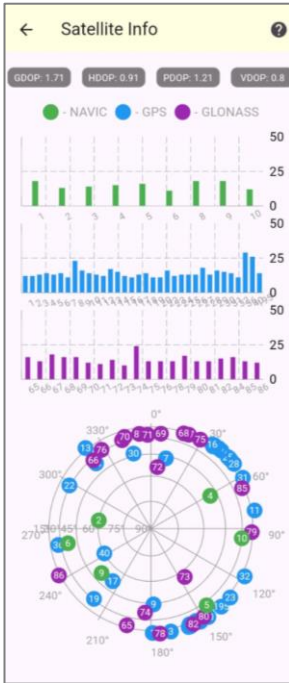


Figure 18 Satellite Info and Sky View Plot

The Sky View displays a sky plot view of satellite position for NavIC, GPS, and GLONASS.

Note: The green dot represents NavIC, the blue dot represents GPS, and the purple dot represents GLONASS on the Sky View.

10. Logout, Reboot, Shutdown

These options allow a user to Logout, Reboot, and Shutdown the Navigator application.

II. UTILITIES PAGE

This page has the following set of utility tools:

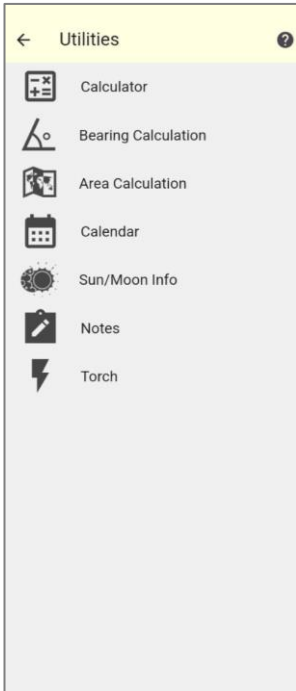


Figure 19 Utilities

- **Calculator:** A simple calculator.
- **Bearing Calculation:** To calculate distance and bearing between two locations by providing the Latitude and Longitude of the two locations.
- **Area Calculation:** Calculate the area covered by a minimum of three locations by providing the Latitude and Longitude of each location.
- **Calendar:** A simple calendar.
- **Sun/Moon Info:** To view astronomical information, including sunrise, sunset, moonrise, and moonset times and lunar info. It also provides a calendar to view this information for future or previous dates by simply selecting the desired date.
- **Notes:** To quickly take down notes.
- **Torch:** Serves as a mobile torch.

12. SETTINGS PAGE

On the Settings page, a user can configure various aspects of the application.

- **Map Screen settings**

Enables a user to select **Lat Lon Format**, **Speed Unit**, **Map rotate** according to the heading, **Compass on Map**, and **Altitude**.

- **Navigation settings**

Allows a user to show or hide the **Navigation Info bar**, adjust **Bearing**, and **Complete navigation** i.e., stop navigation when the device moves away from the target.

- **GR settings**

Allows a user to change the grid reference format - **GR Type** and **GR Figures**.

- **User settings**

Change password.

- **Brightness**

Adjust screen brightness.

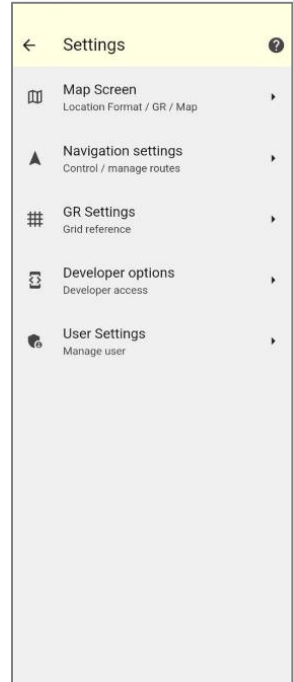


Figure 20 Settings

13. USE CASES

13.1 Create and Navigate to Waypoints

1. Create waypoints as described in the section **Creating Waypoints**.
2. Using the **Navigate To** option, navigate to the waypoint from the current location.
3. Stop the navigation using **Stop Navigation** from the **Navigation** menu.

13.2 Create Routes

1. Create a route by adding waypoints.
2. Go to the **Route** menu.
3. Select the route to see on the map.
4. Start navigating the route by selecting **Start Navigation**.

13.3 Create Tracks

1. Create a track as described in the section **Tracking**.
2. The user starts moving as desired.
3. Tap the **Track** icon to stop tracking the locations.
4. View the track on the map.
5. View the distance travelled and the number of data points collected.

14. CONTACT Us

For **sales enquiries**, kindly contact:

+91 9384864411, 9384864422

For **customer support and feedback**:

+91 6366229433

Know more about our company and products at:

<https://www.elenageo.com/>

Notes

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06	Approved by	Lt Col V S Velan, CTO
07	Date of Approval	___ Feb 2025
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Record of Amendments

Ser No	Date	Amendm ent Title	Amendment Details
1.	26 Nov 2024	Draft	First draft.
2.	28 Nov 2024	Update	Update for clarity and correctness.
3.	07 Feb 2025	New App	Revised for how to use the new app and its features.
4.	21 Feb 2025	Review	Further updates to the user manual. Review comments incorporated.



‘Sky is the Limit’ is old saying;
We believe in ‘Space’, the boundless