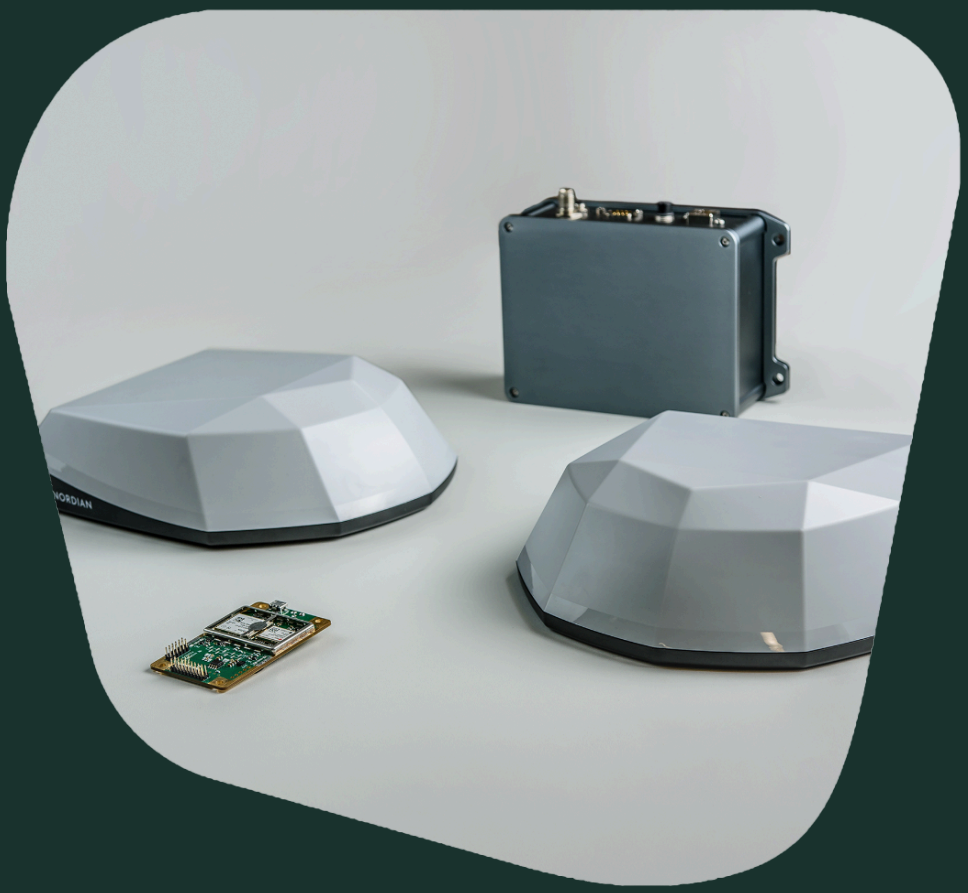
Nordian



True Heading Configuration

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Table of Contents

Overview

This application provides a quick configuration for the True Heading feature. True Heading is determined by using two Smart Antenna devices—one set as the rover and the other as the base. The heading is calculated as the angle measured clockwise from true north to the vector formed between the base and rover antennas.

NOTE: Document valid for 3.2.0 firmware version.

Learn More

If you have any doubt on how to proceed with this configuration, we recommend exploring the following documents with additional information of Smart Antenna configuration:

- Quick Start - Application Notes

True Heading General Setup

Use two Smart Antenna devices, set one as the rover and the other as the base. The rover sends its location to the base via a serial cable, allowing the base to calculate the heading vector. Use your hardware to configure Smart Antenna Rover and Smart Antenna Base. Refer to the figure below for setup guidance and follow the instructions for proper configuration.

NOTE: It may take up to 5 minutes after the setup for the Smart Antenna Base to acquire accurate data.

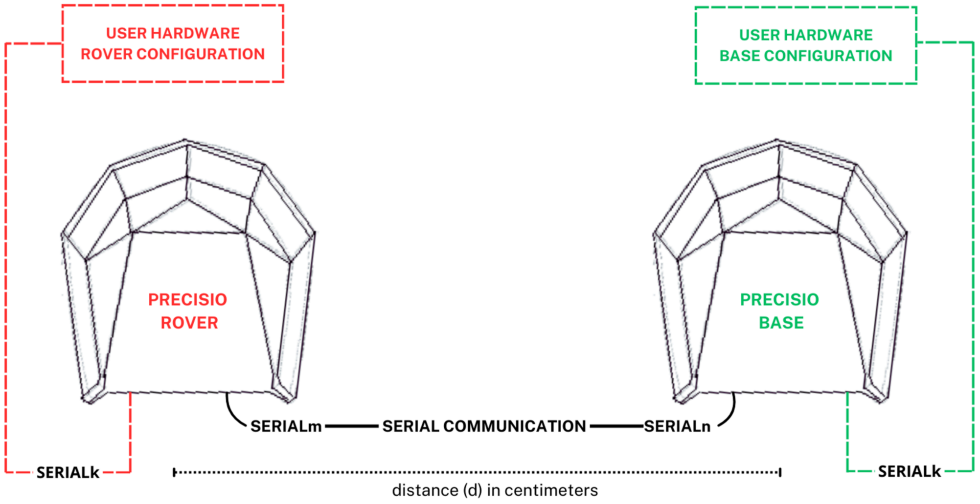

***Figure 1* • True Heading General Setup.**

Also, both Smart Antenna's can be installed in four different ways on the vehicle's rooftop, as illustrated in the figure below:

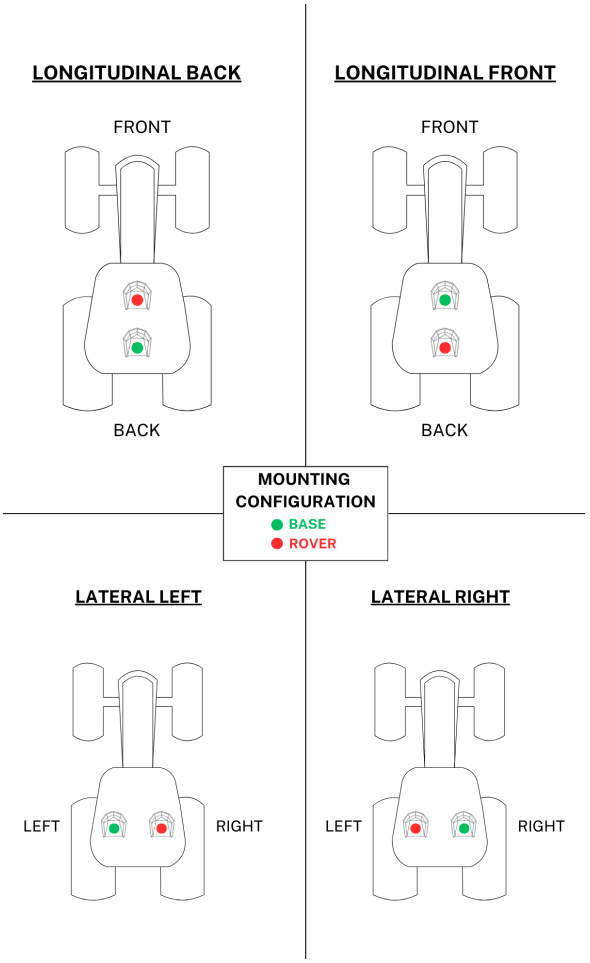

Figure 2 **• Mounting Configuration.**

True Heading Rover Configuration

Device Configuration

The command configures each Smart Antenna device as either a base or a rover. On Nordian Updater, transmit the following command:

```
$TRUE_HEADING CONFIGURATION SET ROVER
```

Serial Port Configuration

On Nordian Updater, transmit the following command to set up which serial port is used on the Smart Antenna rover to communicate with the base:

```
$TRUE_HEADING PORT SET SERIALm
```

- In <m>, select the serial port in use: 1, 2 or 3.

Mounting Distance Configuration

This command sets the distance d (see Figure 1) between the rover and the base in centimeters. This configuration is used to verify the computed distance before activating the heading output.

To configure the distance, use the following command:

```
$TRUE_HEADING ROVER DISTANCE <Distance_cm>
```

- In <Distance_cm>, set the distance measured in centimeters from 0 - 65535.
  The distance value set with this command is only applied when the distance check is enabled. If the check is disabled, the configured distance will be ignored.

The distance check is **disabled by default**. To control whether the computed distance check is active, use one of the following commands:

```
$TRUE_HEADING ROVER DISTANCE <Computed_Distance_Check>
```

- ENABLE: Activates the distance verification before outputting heading; If the computed distance **deviates by more than 20 cm from the set value**, the heading output will be **temporarily disabled**.

- DISABLE: Deactivates the verification. Heading data will be transmitted regardless of the computed distance

Enable True Heading

This command enables true heading on Smart Antenna. On Nordian Updater, transmit the following command:

```
$TRUE_HEADING STATE ENABLE
```

NOTE: When the serial port responsible for communication between the rover and the base is activated, the baud rate is set to 460800.

Saving Configurations

When configurations are altered via Serial commands, they're only active while the device is powered on. Once all the configuration is complete, it is essential to save. On Nordian Updater, enter and transmit the following command to save rover configurations:

```
$TRUE_HEADING CONFIGS SAVE
```

True Heading Base Configuration

Base Device Configuration

The command configures each Smart Antenna device as either a base or a rover. On Nordian Updater, transmit the following command:

```
$TRUE_HEADING CONFIGURATION SET BASE
```

Base Serial Port Configuration

On Nordian Updater, transmit the following command to set up which serial port is used on the Smart Antenna base to communicate with the base:

```
$TRUE_HEADING PORT SET SERIALn
```

- In <n>, select the serial port in use: 1, 2 or 3.

Base Mounting Configuration

In this command, you must specify the mounting configuration chosen and indicate the base position relative to the pilot's reference point, as illustrated in Figure 2.
On Nordian Updater, transmit the following command:

```
$TRUE_HEADING BASE MOUNTING <Mount_Configuration> <Base_Position>
```

- In <Mount_Configuration>, set LONGITUDINAL or LATERAL.
- In <Base_Position>, set base position:
  - If LONGITUDINAL: set FRONT or BACK;
  - If LATERAL: set LEFT or RIGHT.

Enable True Heading

This command enables true heading on Smart Antenna. On Nordian Updater, transmit the following command:

```
$TRUE_HEADING STATE ENABLE.
```

NOTE: When the serial port responsible for communication between the rover and the base is activated, the baud rate is set to 460800.

Saving Configurations

When configurations are altered via Serial commands, they're only active while the device is powered on. Once all the configuration is complete, it is essential to save. On Nordian Updater, enter and transmit the following command to save base configurations:

```
$TRUE_HEADING CONFIGS SAVE
```

Configuration Status

Once the configuration is complete, you can issue a command to retrieve the True Heading Status and confirm that the configuration was applied correctly. On Nordian Updater, enter and transmit the following command:

```
$TRUE_HEADING CONFIGS STATUS
```

NMEA 0183 HDT Message

After completing all configurations, you can set the Smart Antenna Base to display the NMEA0183 HDT message, which shows the real-time heading angle. On Nordian Updater, enter and transmit the following command:

```
$NMEA0183 SERIALk ENABLE HDT <Period>
```

- In <k>, select the serial port
- In <Period>, set the refresh rate of the message in milliseconds. Choose a number from 10 to 60000 ms.

Example of Configuration – Rover

Let's assume we're using rover serial port 3 to communicate with the base, which is located 1 meter away. To configure this setup, follow these steps:

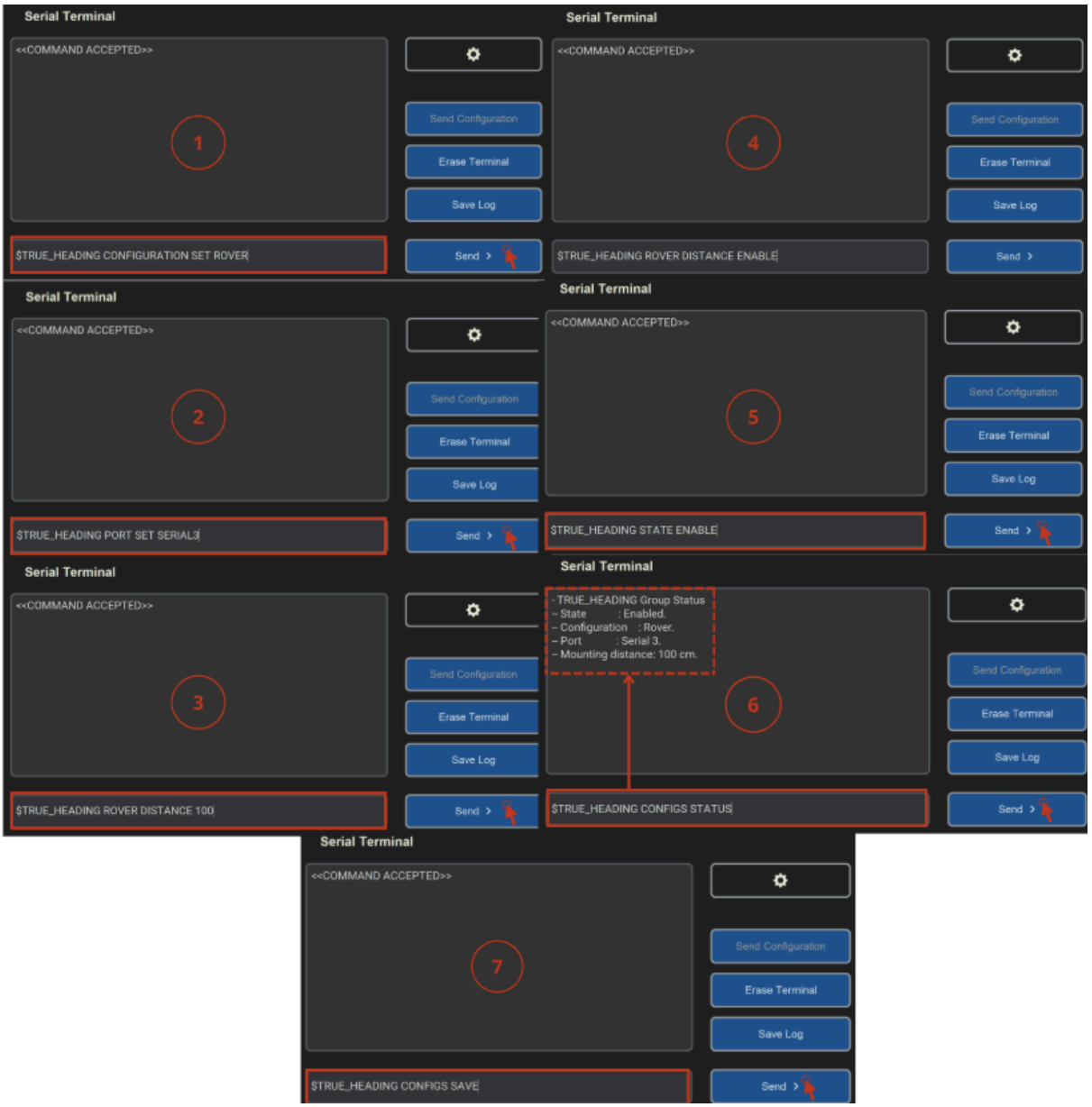

Figure 3 **• Example of Smart Antenna Rover Configuration.**

Example of Configuration – Base

Let's assume we're using base serial port 2 to communicate with the rover, and the mounting type is lateral with the base positioned on the right. To configure this setup, follow these steps:

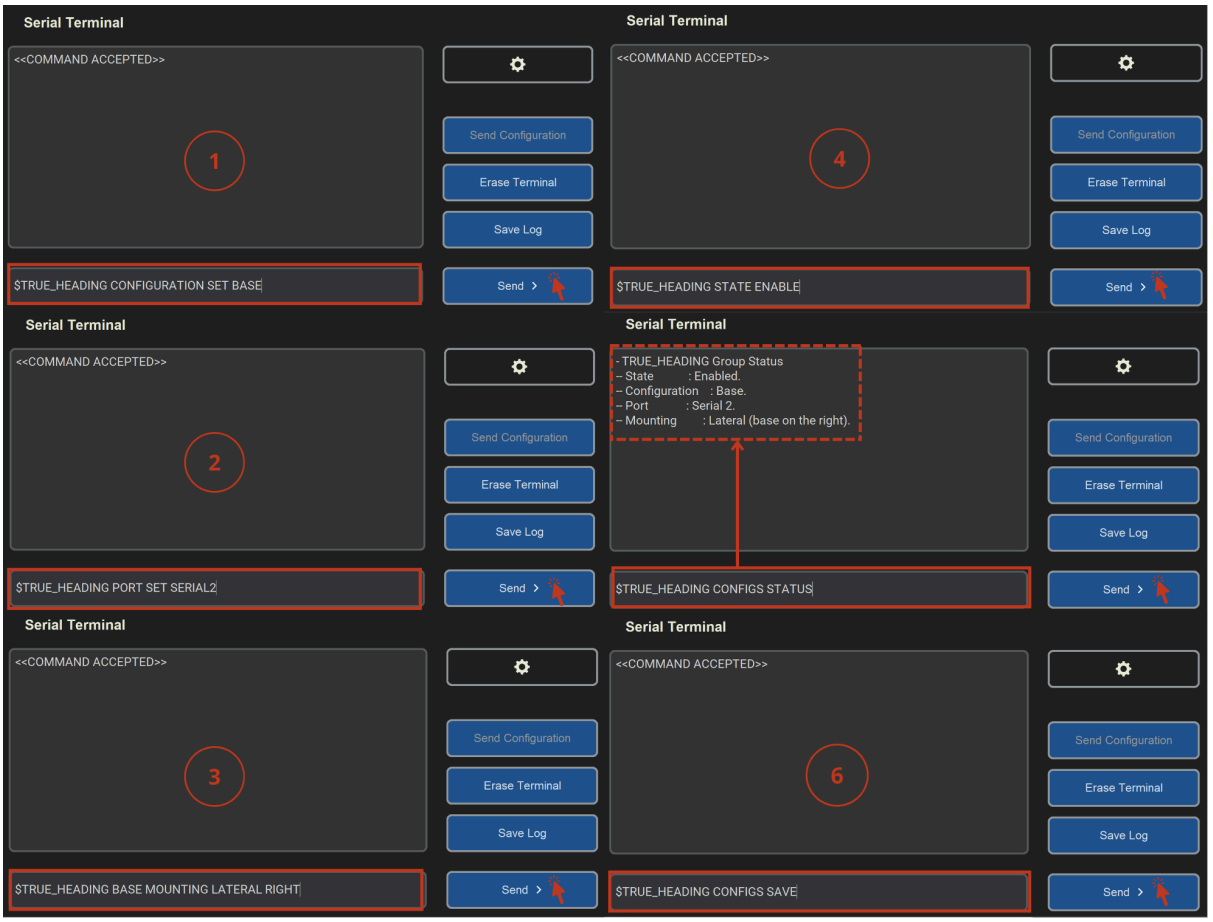

Figure 4 **• Example of Smart Antenna Base Configuration.**

Example of Configuration – NMEA 0183 HDT

The HDT message displays the heading angle and checksum. To update this message every half of a second, follow these steps:

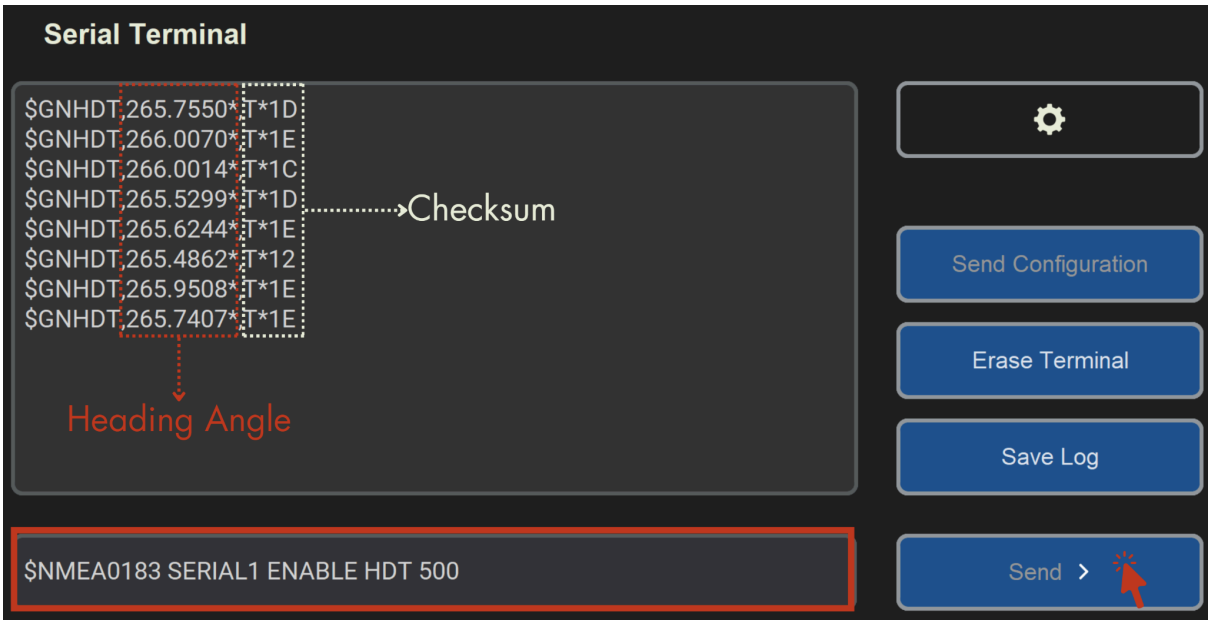

Figure 5 **• Example of NMEA 0183 HDT Message Configuration.**

Support

By following these steps, you can effectively configure the True Heading feature. For specific support, doubts and warranty claim, contact Nordian Inc at:

URL: www.nordian.com
SAC: support@nordian.com