Nordian

Antenna Position Configuration

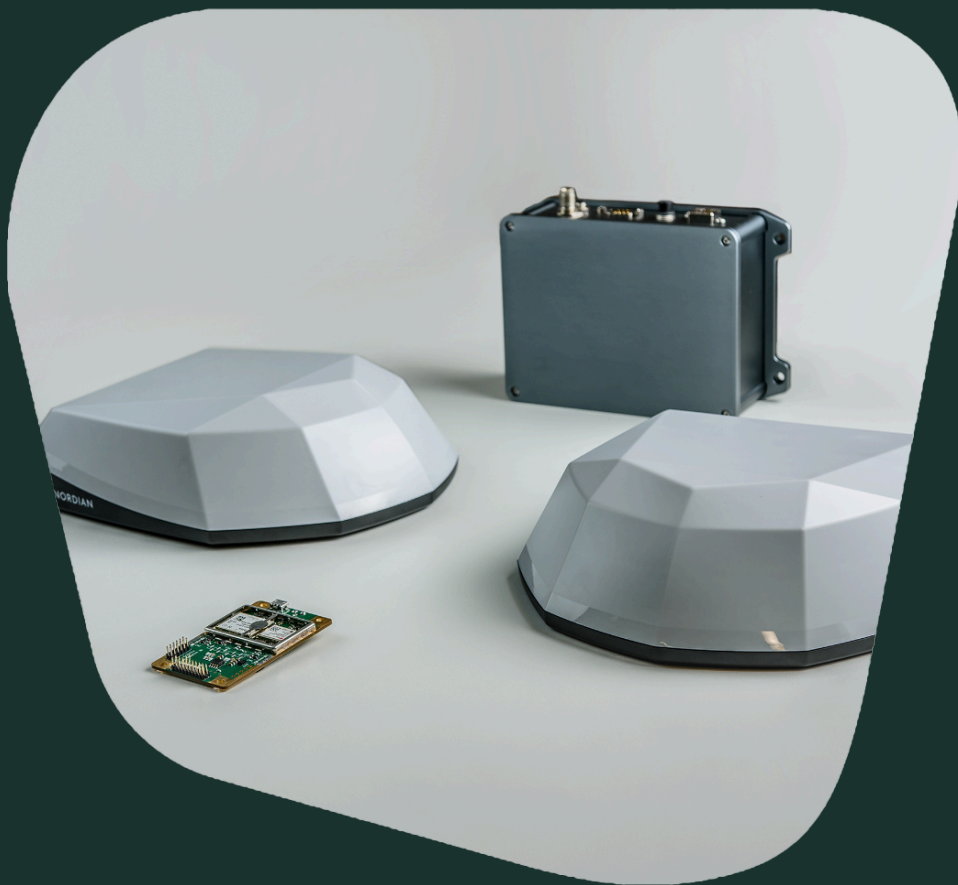Application Notes FW 2.9.9

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Overview

Antenna Compensation is an algorithm that compensates the position and course over ground based on the longitudinal distance to the vehicle's rear axis and the transversal distance to the vehicle's longitudinal central axis.

Note: Document valid for firmware version 2.9.9 or newer

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

Enabling Antenna Position

By default, antenna position compensation is disabled. To enable it and apply the compensation to either position or course over ground, use the following command:

```
$ANTENNA_POSITION STATE ENABLE <Type> <Reference_Position>
```

- <Type>: specifies where the antenna compensation will be applied.
  - COORDINATES to apply compensation on position.
  - COURSE_GND to apply compensation to the course over ground.

- <Reference_Position>: Defines which antenna location to use as the reference point for compensation.
    - REAR: If the reference antenna is mounted at the rear of the vehicle or equipment.
    - CENTER: If the reference antenna is located at the vehicle or equipment's center.
    - To enable both REAR and CENTER positions, do not add any extra characters or symbols

Warning: When using COURSE_GND, only the REAR position is supported.

Disabling Antenna Position

To disabled, just send the command below:

```
$ANTENNA_POSITION STATE DISABLE <Type> <Reference_Position>
```

Setting Center and Rear Distance

To correctly apply antenna compensation, it's important to measure the distances between the antenna and the vehicle's reference points. The illustration below shows how these distances should be measured in relation to the vehicle's frame and motion direction.

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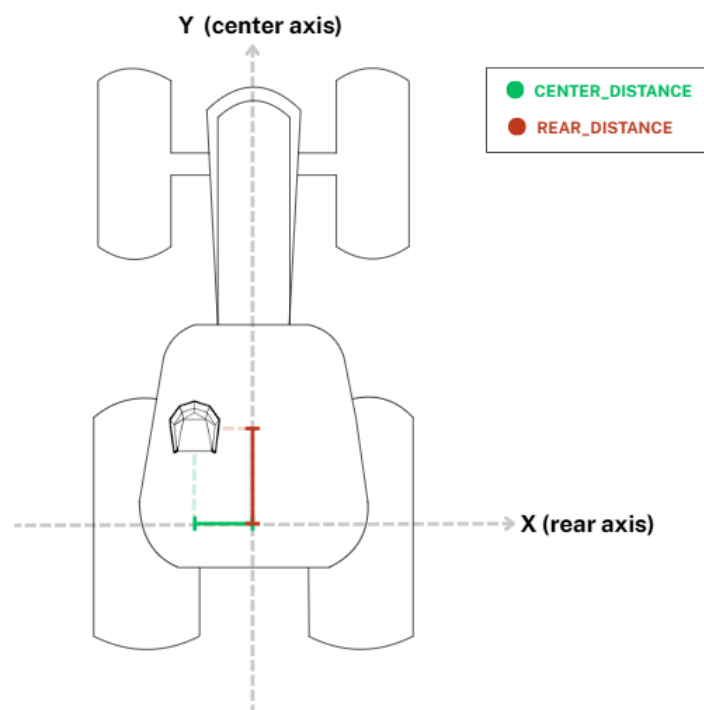
The diagram above illustrates how to measure the antenna offset distances for proper position compensation:

- The green line represents the distance from the antenna to the longitudinal center axis (CENTER_DISTANCE).
- The red line represents the distance from the antenna to the rear axle (REAR_DISTANCE).

These measurements are made from the center of the antenna to each reference axis on the vehicle body.

To correctly configure these distances, use the following coordinate frame (as illustrated):

REAR_DISTANCE: measured distance along the **Y-axis**

- **Positive** → antenna is **in front** of the rear axis
- **Negative** → antenna is **behind** the rear axis

CENTER_DISTANCE: measured along the **X-axis**

- **Positive** → antenna is on the **right** side of the center axis
- **Negative** → antenna is on the **left** side

Setting Rear Distance

Set the rear distance using the command below:

```
$ANTENNA_POSITION SET REAR_DISTANCE <Distance>
```

- <Distance>: Set the distance value from the rear axis, in centimeters.

Setting Center Distance

Set the center distance using the command below:

```
$ANTENNA_POSITION SET CENTER_DISTANCE <Distance>
```

- <Distance>: Set the distance value from the center axis, in centimeters.

Configuration Status

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

```
$ANTENNA_POSITION CONFIGS STATUS
```
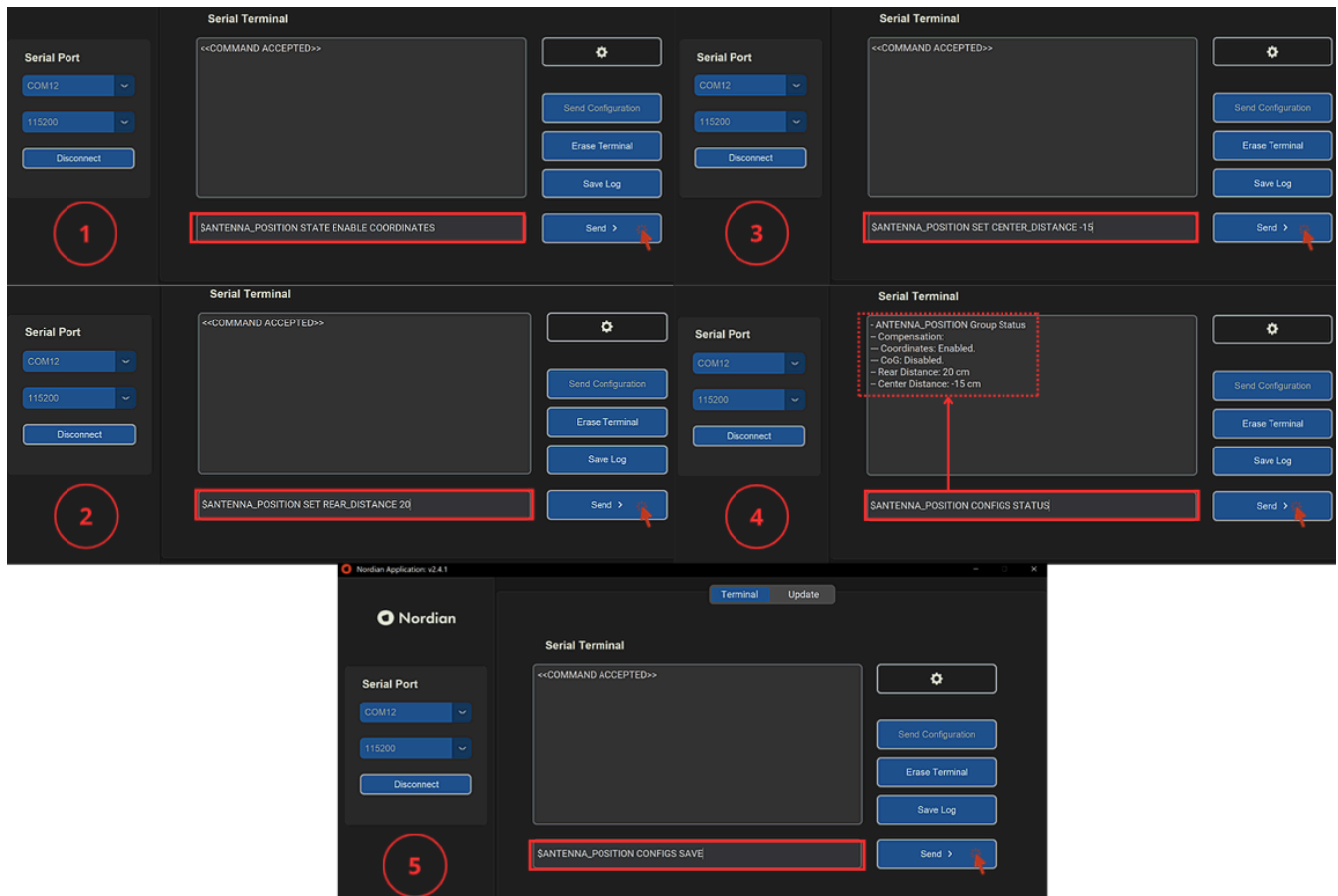
Saving Configurations

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:

```
$ANTENNA_POSITION CONFIGS SAVE
```

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Example of Configuration

Here's a quick example demonstrating how to apply and enable antenna compensation on the position using the antenna in the figure above as a reference. In this example, the rear distance is set to 20 cm, and the center distance is set to -15 cm.

Support

For assistance with the configuration, activation, or diagnostics of the Antenna Position feature, please contact Nordian Inc. This includes technical support, questions, or warranty claims related to Antenna Position.

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