



Duro Firmware v4.0.0

Release Notes

Version 1.0

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1. INTRODUCTION

This firmware release is targeted for *Duro* and *Duro Inertial*.

2. CHANGES AND FEATURES

- Decoupled INS rate from GNSS rate to allow for higher INS solution and output rates. This is now a configuration parameter in the INS section called *ins_freq*.
- Improved INS performance with higher IMU rates.
- Improved INS output message latency for all configurations.
- Updated SBAS logic to improve accuracy during periods of atmospheric disturbance..
- For dual Duro, roving RTK systems, the INS pose filter can now ingest antenna to antenna baseline vectors. This improves heading accuracy and allows the INS to generate accurate heading even when the vehicle is not moving.
- The Duro now exposes new INS parameters *self_to_rover_antenna_offset_x*, *self_to_rover_antenna_offset_y*, *self_to_rover_antenna_offset_z* that allow configuration of the expected offset. The Duro will ignore an offset vector of zero (*see section 3.1*).
- Duro will now also provide an INS configuration parameter *enable_baseline*, that allows the user to control the use of the antenna offsets (*see section 3.2*).

3. CONFIGURATION UPDATES

3.1 USING THE ANTENNA OFFSETS CONFIGURATION

Three new parameters are now available to the user and are intended to help the INS engine compute a more accurate orientation when using two Duros in the moving baseline configuration. These parameters tell the primary Duro the static vehicle frame offset between its antenna's phase center and the phase center of the antenna used by the secondary/auxiliary Duro.

Note: Baseline data is ignored if all three are set to a value of 0 or if the *enable_baseline* parameter described in *section 3.2* is set to *False* (default).

These parameters are available under the *ins* section in the Duro configuration:

- *self_to_rover_antenna_offset_x* (float)
- *self_to_rover_antenna_offset_y* (float)
- *self_to_rover_antenna_offset_z* (float)

3.2 ENABLING/DISABLING THE USE OF BASELINES

The Duro now exposes a parameter to disable use of baselines for scenarios where stationary RTK is used and the baselines computed are invalid for use in computation of orientation.

This parameter is available under the *ins* section in the Duro configuration:

- *enable_baseline* (True/False)

3.3 DECOUPLED INS FREQUENCY

With the release of v4.0.0, users will now be able to set the output rate of the INS solution independent of the solution/soln_freq setting. As of this release, the Duro will only support output rates of *10, 25 and 50 hz*.

This parameter is available under the *ins* section in the Duro configuration:

- *ins_freq* (10/25/50)

4. SBP VERSION

- [SBP v4.1.1](#)

5. SHA-256 HASH

56b2cbb3a6702f388e38f8cca0dede3f87e858b75f591152b0228b88f441fd12