FIXPOSITION

Vision-RTK 2 Release Notes

Release v2.85.2

FEBRUARY, 2024

Precise positioning everywhere

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1. Overview

This release consists of the following artifact:

- Image: fp_vrtk2-release-vr2_2.85.2-338.6307ac5d181bc12576e7e47ce713fcdc.swu

At the time of release, the following support documents and code are valid:

- Documentation
  - Release notes (this document): VRTK2_v2.85.2_release notes.pdf
  - Integration manual: VRTK2_integration_manual_v2.2.2.pdf
  - Datasheet: VRTK2_Datasheet_v1.0.pdf
- Support software
  - fixposition_driver-6.1.4: https://github.com/fixposition/fixposition_driver/tree/6.1.4
  - fixposition_gnss_tf-3.0.1: https://github.com/fixposition/fixposition_gnss_tf/tree/3.0.1

For any questions or issues, please contact Fixposition support at support@fixposition.com.

2. Release notes

The changes described here are with respect to the release 2.77.2.

2.1. Positioning

During initialization:
- Reduced cold- and warm-start IMU convergence times.
- Improved initialization stability when warm-start biases are available.
- Enhanced heading estimation stability during initialization.
- Decreased jitter when the sensor is stationary, particularly during initialization prior to initial motion.
- The estimated wheelspeed scale factor will only be stored for warm-start after convergence.

During operation:
- Enhanced positioning robustness and performance in platforms with slow dynamics and after prolonged GNSS outages.
- Improved positioning stability in multipath and other GNSS-degraded scenarios.

Functionality:
- Renamed "Handheld" tuning mode to "Generic" and enabled wheelspeed measurements in this mode when they are available.

2.2. GNSS

- Added GNSS corrections stream options for explicit NTRIP v1, NTRIP v2, and TCP client.
- Included GGA messages to port 23010 output.

2.3. Web interface

- Added "Configuration -> Time" page to configure the PTP grandmaster with different profiles: PTPv2 E2E (IEEE 1588-2008), gPTP (IEEE 802.1AS), and Avnu automotive.
- Added a Remote Support feature to the "System -> Tools" page for remote online support. Fixposition can offer remote support upon the user's request and authorization. For more information, see Section 5.14 of the Integration Manual.
- The Fusion engine status badge now includes the selected tuning mode (e.g., "Car", "Generic", etc.).
- Wheelspeed convergence badge now displays "Not used" when a wheelspeed input is not configured.
- SSID broadcast can now be disabled in the Wi-Fi access point settings.
- Added RTP camera streaming. For more information, see Section 5.6.1 of the Integration Manual.
- Camera crop cannot be configured when Fusion is running.
- Display correction data (NTRIP client) connection status on GNSS status page.
- Fixed resetting Fusion mode config back to "Car" when changing I/O configuration in FW 2.77.
- Added Rotation and Dimensions configuration for the wheelspeed sensors (it is now possible to input 3d measurements via FP_B-MEASUREMENTS (FP_B-MEASUREMENTS). This message is utilized to input measurements, such as wheel speeds, into the sensor. It serves as a replacement for NOV_B-RAWDMI, which was primarily used for wheel speeds previously.
- Replaced web interface reconnecting popup with loading icon/animation.
- Simplified wheelspeed configuration. Replaced Type and Device inputs with a single popup menu with all the valid choices. This prevents inputing invalid types/device combinations.
- Added default route indicator in network configuration page.
- Fixed "Configuration -> I/O -> CAN" interface spurious warning.
- Show warning and error alert on the GNSS status page when the baseline to the basestation is too far.

2.4. Data interface

- Added FP_B-MEASUREMENTS input message. This replaces the NOV_B-RAWDMI input. (see FP_B-MEASUREMENTS).
- Added NOV_B-BESTVEL_FUSION message: NOV_B-BESTVEL
- Added NMEA-GP-GLL_GNSS, NMEA-GP-GLL_GNSS1, NMEA-GP-GLL_GNSS2, NMEA-GP-GLL_FUSION messages: NMEA-GP-GLL
- Added NMEA-GP-VTG_GNSS, NMEA-GP-VTG_GNSS1, NMEA-GP-VTG_GNSS2, NMEA-GP-VTG_FUSION messages: NMEA-GP-VTG
- Added NMEA-GP-ZDA_GNSS, NMEA-GP-ZDA_GNSS1, NMEA-GP-ZDA_GNSS2, NMEA-GP-ZDA_FUSION messages: NMEA-GP-ZDA
- Added NMEA-GP-GST_GNSS, NMEA-GP-GST_GNSS1, NMEA-GP-GST_GNSS2, NMEA-GP-GST_FUSION messages: NMEA-GP-GST
- Added NMEA-GX-GSV message output (NMEA v4.11, not backwards compatible)
- Added NMEA-GN-GSA message output (NMEA v4.11, not backwards compatible)
- Populated the last two fields in all NMEA-GGA messages: NMEA-GP-GGA.
- Improved stability of message output.
- Corrected rounding and overflow issues with NMEA date and time.
- Camera streaming is replaced by Camera Image Streaming.

2.5. Other

- Added "System -> Tools -> Data" reset. Currently, this deletes the Fusion warmstart data (e.g., IMU biases and wheelspeed scale factor).
- Reworked "System -> Tools -> Reset" configuration and "System -> Tools -> Factory" reset.
- Deleted camera bags and recording logs in "System -> Tools -> Factory" reset.
- Updated /camera/rec_rm and /log/rm APIs: Added "delete all files" option, fixed result flag for bad filenames in requests.
- Bug fixes to improve general software stability during long-time operations.

- The Fusion "autostart" configuration is now persistent.
- Replaced /time/ptp_ctrl API with /time/ptp_{get,set,reset} APIs.

2.6. Known limitations

- When recording (to external disk) powering off (by cutting power) or unplugging the USB disk too early may lead to data loss in the recording. Use the Web interface to download the recordings, unmount the disk or shutdown the sensor to prevent data loss.
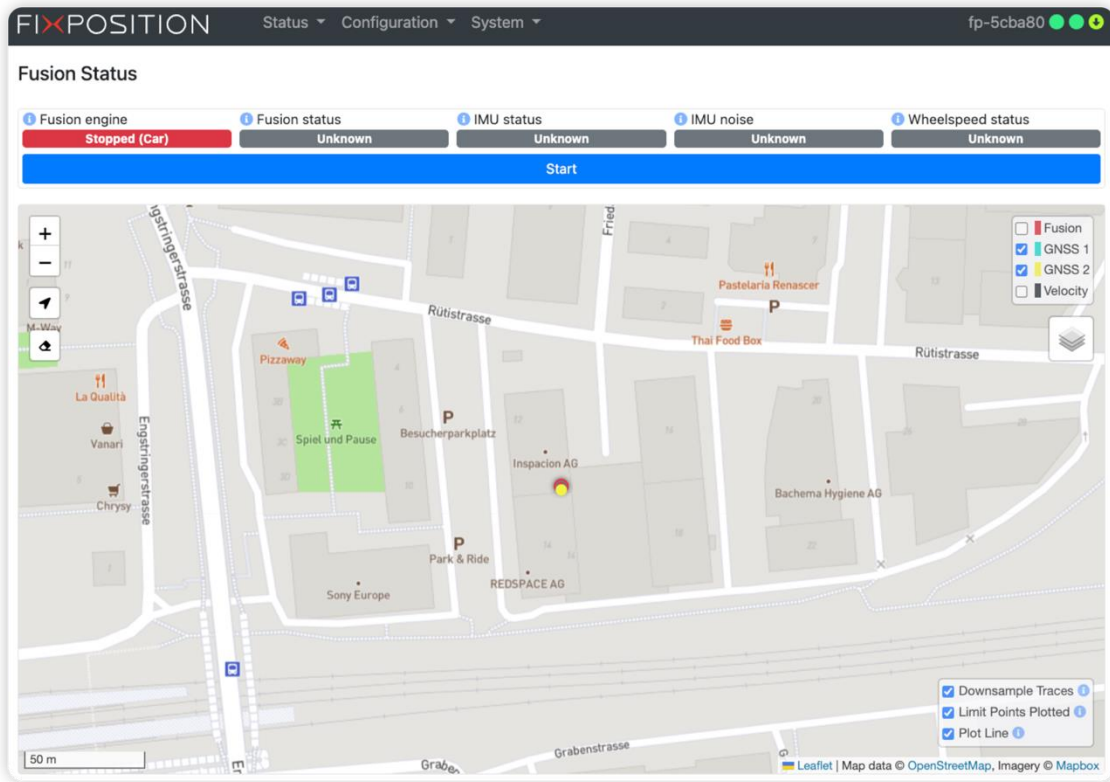
3. Highlights

3.1. Fusion engine status badge

Figure 1 fusion engine status badge
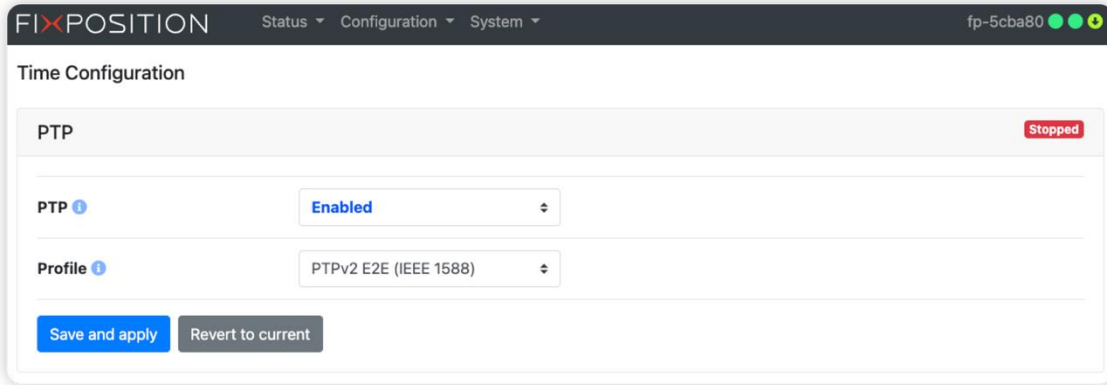
3.2. PTP configuration interface

Figure 2 PTP configuration interface

3.3. New "Generic" tuning mode replacing "Handheld"

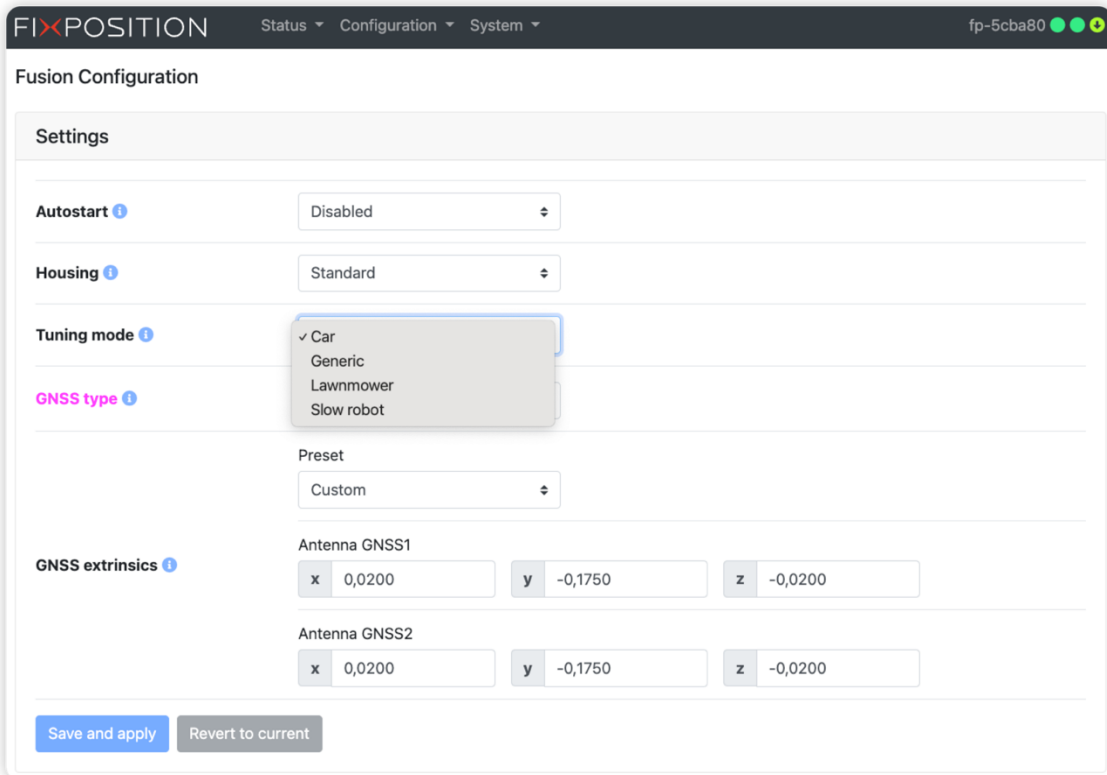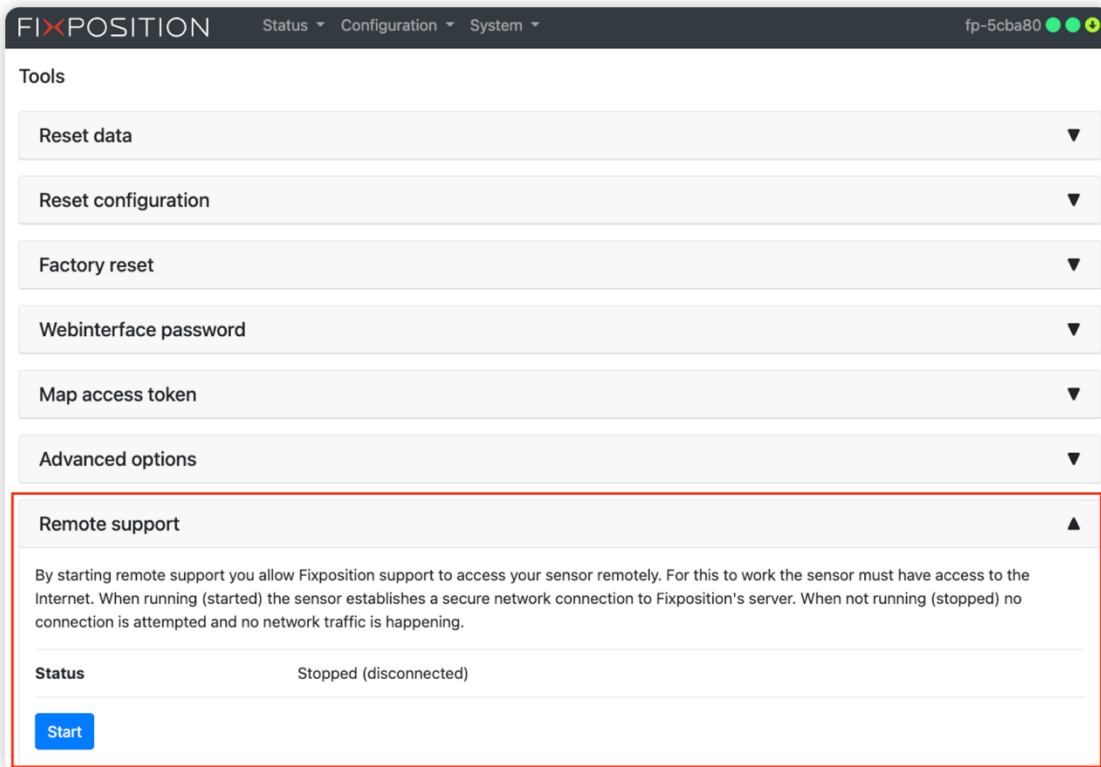*Figure 3 selection of tuning mode*

3.4. Remote support

Figure 4 remote support