

Vision-RTK 2 Release Notes

Release v2.63.3

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1. Overview

This release consists of the following artifact:

- Image: fp_release_vr2_2.63.3_227.8d16c3f7ec544359888adf3349830842.swu

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

- Documentation
 - Release notes (this document): VRTK2_v2.63.3_release notes.pdf
 - Integration manual: VRTK2_integration_manual_v2.0.7.pdf
 - Datasheet: VRTK2_Datasheet_v1.1.pdf
- Support software
 - fixposition_driver-6.1.0: https://github.com/fixposition/fixposition_driver/releases/tag/6.1.0
 - 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 2.58.2.

1.1 Positioning

- Fixed fusion autostart procedure not working on boot.
- Improved warmstart procedure and IMU bias convergence.
- Improved performance in low parallax situations.
- Improved fusion stability at higher speeds.
- Removed the automatic extrinsics calibration and automatic wheel-speed calibration functionality.
- Fixed position drift in long tunnels when using wheelspeed.

1.2 GNSS

- GNSS correction input now defaults to input from the I/O port.

1.3 Web interface

- Fixed configuration and factory reset tools.
- Improved general robustness, stability, and speed.
- Improved layout consistency and display on small screens.
- Improved interaction by blocking buttons and form fields while operations are processing.
- Improved wheel-speed configuration.
- Improved logfile listing and recording status display.
- Improved camera configuration page.
- Improved warning and notice indicators in the title bar.
- Improved stability and reliability of the network configuration interface.
- Improved adding Wi-Fi client connections dialog.
- Improved texts of the help tooltips.
- Improved error popup text when backend API requests fail (see also Known limitations below).

- Added a show/hide button to all password and secret inputs. Some configuration fields deliberately do not show a set password. The user can only set a new password but not view an existing one.
- Added IPv4 gateway, netmask, and DNS configuration for network connections.
- Added configuration to select Wi-Fi band and to turn off Wi-Fi.
- Added a new configuration page for I/O configuration (see also “Data interface” below).
- Added support for shutting down (powering off) the sensor.
- Added support for configuring the map access token.
- Moved software update from “http://x.x.x.x:8080” to “http://x.x.x.x/update”.
- Removed camera calibration logs from the logs page. Added a link to the camera page instead.

1.4 Data interface

- Added support for UART2 (on AUX connector).
- Added support for configuring baud rate on UART1 and UART2 ports.
- Added support for multiple TCP ports. Up to 5 separate input and/or output streams can be used in parallel.
- Added support for input/output on CAN interface (classical CAN or CAN FD).
- Added support for configuring output messages individually per port.
- Added configuration and support for non-standard high-precision NMEA output.
- Added support for input of GNSS correction data and wheel-speed on all I/O ports.
- Add support for NOV_B-RAWDMI measurement types (binary backward compatible with earlier versions of the VRTK software).
- Added detailed I/O information for all ports and messages.
- Fixed fusion output to be aligned to top-of-second.
- Changed messages:
 - FP_A-ODOMETRY updated to version 2: added GNSS fix information for both receivers.
 - FP_A-TF updated to version 2: added timestamps.
 - NOV_B-BESTGNSSPOS: user msg_type/msg_source header field is now correctly set to show the source (GNSS1 or GNSS2 receiver) of the data.
- New messages:
 - NMEA-GP-GGA: Global positioning system fix data (GNSS1 or GNSS2, or GNSS1/2).
 - NMEA-GP-RMC: Recommended minimum specific GNSS data (GNSS1 or GNSS2, or GNSS1/2).
 - FP_A-GNSSANT: Antenna state and power information (GNSS1 and GNSS2).
 - FP_A-GNSSCORR: Extended GNSS fix and correction data information (GNSS1 and GNSS2).

1.5 Other

- All configuration is now persistent across software updates (see exceptions below).
- Improved handling of time adjustments due to time sync to GNSS. See also known limitations below.
- Added a preliminary HTTP API for sensor control, such as starting and stopping fusion, status monitoring, and configuration.
- Improved system robustness under high load (such as when recording logs).
- Fixed excessive memory and CPU consumption when recording logs.
- Improved time sync stability when the VRTK system is under heavy CPU load.

1.6 Known limitations

- The Fusion autostart configuration is not persistent across software updates. That is, after a software update, the Fusion autostart is disabled.
- Time sync of the VRTK system time to GNSS time can lead to interruptions in Fusion data availability when system time adjustments are needed. Fusion data in the output is invalid during those events. This can take several seconds. Users are recommended to wait for GNSS time synchronization before starting Fusion respectively before starting to use Fusion output.

- High system load (for example, when recording) can occasionally produce outages in Fusion (pose).
- High system load (for example, when recording) can make the web interface unresponsive, slow, or occasionally fail. This is expected as the tuning of the system favors its primary functions, such as Fusion, over secondary ones, such as responding to web interface API requests.
- Wi-Fi client connections may not work at all or are unreliable for some more exotic setups, such as SSIDs with special characters, networks that use the same SSID for multiple bands, or 5 GHz networks.
- It may take a long time for the sensor to reconnect the Wi-Fi client after losing the connection.
- WPA-PSK (“WPA2”) is the only supported Wi-Fi security mode. SAE (“WPA3”) or open networks are not supported.
- Wi-Fi client connections are not fully reliable in all situations. Users are recommended to use cable connections (such as Ethernet or UART) for operational use of the sensor.
- The GNSS receiver reset function in the advanced view in the webinterface is broken. One cannot reset the receivers.
- The display of the basestation on the map is wrong for any station with latitude < 0, longitude < 0 or longitude > 90 (e.g. Australia). The correction data is still used correctly by the GNSS receiver.

1.7 Software update instruction

Depending on the currently installed version:

- 2.49.0 or later: Upgrade to this release by installing the image.
- 2.48.x or earlier: Do not install the image. Contact Fixposition for upgrade options.

To install the software update image (.swu file):

1. Prepare the sensor for upgrade:
 - Ensure the sensor has a reliable power supply. A power outage during the software update process can make the sensor unusable.
 - Ensure that a reliable network connection is used. Using an ethernet connection is strongly recommended. Using a Wi-Fi connection is strongly discouraged.
2. Go to the web interface (<http://10.0.2.1> in the default ethernet configuration) and go to System → Firmware
3. Load the updated image (the .swu file) into the Software Update form (drag and drop, or click to open the system’s file open dialogue to select the .swu file).
4. Wait until the update process has completed and the sensor has rebooted.
 - Note that when upgrading from 2.58.0 or earlier the update page will be stuck at “The system will restart. Please be patient, as restarting takes about one minute.”. Please wait a minute and then manually open <http://10.0.2.1> to get back to the main interface.
5. Verify that the Configuration → Fusion page settings are correct and adjust them as needed.
6. **Important:** This release resets some configurations, such as the output configuration. Check and update the configuration accordingly.