

Service Bulletin No. 0003

Subject

New Veronte Autopilot 1x firmware, release 6.12.92-GA.

Compliance Consideration

Embention considers this Service Bulletin as recommended.

Models affected

All Veronte Autopilots running any firmware release in 6.12 and prior to revision 6.12.92.

Effectivity date

05/02/2024

Compliance time

This Service Bulletin is recommended at the next scheduled maintenance event.

Purpose

Veronte Autopilot 1x firmware update to release 6.12.92-GA.

Release Notes: 6.8.126 → 6.12.92

Added:

- Now the distance to closest obstacle is computed.
- New blocks to compute the numerical derivative and integral of an input signal.
- New vector blocks for PDI block builder; block vector subtract and cross product.

- Support for worldwide geoid and magnetic field data from SD using DFS2.
- Support to format a specific partition on DFS2.
- Algorithm to count laps in a given closed patchset.
- Now a unique file of file system is now dedicated to save PDI errors source from booting stage.
- Signed patch curvature computation.
- Dedicated CAN consumer/producer for AP variable sharing for respect.
- New Notch filter in IMUs.
- Configurable ranges for real operation variables.
- New acceleration limit block.
- Polygon geofence capabilities. Now polygons can be selected as obstacles or as geofence.
- BCS - System OK variable support.
- Veronte SIL for Linux released..
- New PDI error: pdi_wrapper, ID 86. It is triggered by the "wrapper class" (bounds a real number to the given limits) when the configured minimum limit is greater than the configured maximum limit.

Removed:

- Sensed obstacles support.
- BCS - Don't check unassembled sensors in system OK variable computation.
- External commanded pressure USSA first order filter was removed. The commanded pressure is already filtered when the desired pressure is injected to autopilot.

Changed:

- Position and velocity EKF adapters now need an independent initial continuous fix in order for their measurements to be used in the EKF.
- Incremented serial over CAN and CAN Input/Output filters.
- Runway and spot positions are now accessible in FIDs.
- Geoid and estimated terrain height configuration separated in different PDIs, coarse and fine SRTM meshes deleted from PDI.
- Flight envelope moved to cruise guidance block.
- Velocity state in navigation is now double precision to decrease numerical errors in inertial navigation.
- Minimum variance of $10e-4$ in relative position input to the Extended Kalman Filter to avoid instabilities in the filter.

- DEM calibration now computes an offset for the SRTM data so the estimated AGL equals the desired one for the current point of the UAV.
- 8 bits checksum field on Custom Message feature is now applying a mask from the configured number of bits.
- Order of application of acceleration and velocity limits in the envelope. Now the acceleration limits have more priority.
- Optimisation in the readings of the Geoid, SRTM and magnetic field maps from the Internal Memory so that the number readings from the Internal Memory is reduced.
- External command for atmospheric USSA calibration (from ground to air): now position fixed and geoid data valid are required in ground to be able to send the calculated command.

Fixed:

- GNSS Compass feature by providing support to new GNSS ZED-F9P for UBX-protocol's NED frame.
- Extended response from System Status Manager by consistently incrementing the internal change counter (that ensures application to be aware of system changes).
- Sniffer status bits were being overwritten by the firmware.
- Dynamic pressure measurement bounded to be equal or higher than 0 to prevent problems when computing its square root in the IAS computation.
- Events are now only checked after the initialisation of the sensors is finished. Also, the reading of the GPIO ports have been moved to be done before the execution of the blocks. Both changes prevent the execution of events using uninitialised states from the blocks computation or from the GPIOs.
- Transition from external navigation to internal could reset the position and velocity states. This has been fixed and now the position and velocity states are always kept in the transition. The EKF covariance matrix is initialized in the transition to its configured initial values.
- Old static pressure user calibration set to zero, as it cannot be modified by an external tool anymore.
- CAN Custom Messages Producer initialization.
- GNSS compass. GNSS position block is now considering a rover any Ublox receiver that does not have enabled the RTCM messages 1005 or 4072.
- External command for atmospheric USSA calibration (from ground to air) is now calculated with the mean value of all active static pressure sensors for 5 seconds.
- GPIOs initialization in maintenance mode to avoid undesired behavior.

Instructions

Firmware update instructions can be found at <https://manuals.embention.com/veronte-updater/en/latest/index.html>

Material required

- Veronte Autopilot 1x firmware release 6.12.92-GA, available at the Joint Collaboration Framework.
- Veronte Tools last package, available at the Joint Collaboration Framework.

Note

Go to <https://manuals.embention.com/joint-collaboration-framework/en/0.1/index.html> for help finding the latest software versions at the Joint Collaboration Framework.