AP+ LV Release Notes

Document #: **PUBS-CINS-006682**

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1. Introduction

This document describes the major changes between each official release of AP+ LV firmware.

2. AP+ V1.5 Firmware 8.30.213

Release date 2024-01-12

Release of LV firmware for the new AP+ V1.5 hardware platform.

- **New IMU Support**
  - Added legacy IMU 80 supports for AP+ 50 LV configuration.
  - Added IMU 93 and IMU 95 supports for AP+ 30 and AP+ 50 LV configurations respectively.
- **I/O Configuration**
  - Added GSOF Strobe Info stream (#72) and GSOF DMI status stream (#73). Refer to the AP+ Interface Control Document for details on messages.
  - Added Legacy uPOS ICD Group 1, 2, 3, 7, 10, 11, 20, 38, 99, and 20000 messages, including:
    - Group 1: Vehicle Position, Velocity, Attitude & Dynamics
    - Group 2: Vehicle Navigation Performance Metrics
    - Group 3: Primary GNSS Status
    - Group 7: PPS Time Recovery and Status
    - Group 10: General Status and FDIR
    - Group 11: Secondary GNSS Status
    - Group 20: IIN Solution Status
    - Group 38: GNSS Receiver RTX Status
    - Group 99: Versions and Statistics
    - Group 20000: User Diagnostic Information (Base station correction message status)
  - Added Legacy NMEA PPS output
- **GAMS Calibration**
  - Added Calibration Start Heading Accuracy (see screen grab below regarding the updates on GUI). For the GAMS Calibration procedure, please refer to Applanix support for further details.

  - Added messages for GAMS Calibration Control, including setting up GAMS calibration parameters, starting GAMS Calibration, and getting GAMS calibration parameters/status. Refer to the AP+ Interface Control Document for details on messages.
  - Enhanced GAMS Calibration performance and reduced calibration time.

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- **Receiver Configuration**
  - Added distance-based strobe and time-based strobe features for AP+ LV and displayed the strobe configuration on the web GUI (as shown below).

  - Added User Accuracy Specification page to allow users to define attitude, heading, position, and velocity RMS accuracy thresholds.

- **INS Control**
  - Added INS Diagnostics page to display system diagnostics indicators.
  - Fixed position and velocity value inconsistent issues between the reference frame and vehicle/sensor frames on GUI output.
- **Navigation**
  - Enhanced navigation engine to maintain data integrity and reliability during long GNSS outages.
  - Fine-tuned navigation engine for IMU57 and GAMS, for a more stable and robust navigation solution.
- **Data Logging**
  - Enhanced stability for ethernet logging.
  - Improved to output firmware version in T04 record.
- **Web GUI**
  - Updated Trimble GUI.

3. AP+ V1.5 Firmware 8.20.216

Release date 2022-08-22

Release of LV firmware for the new AP+ V1.5 hardware platform.

- **Receiver Configuration**
  - o Added time-based strobe feature for AP+ LV and displayed the strobe configuration on the web GUI.
- **Navigation**
  - o Enhanced system stability during high CPU loading condition.
- **I/O Configuration**
  - o Ethernet logging output stream available independent with internal logging.
    - ▪ *Note: The system must deselect the Ethernet logging on the previous firmware (8.20.008) before upgrading to the new release firmware that supports independent ethernet logging.*

4. AP+ V1.5 Firmware 8.20.008

Release date 2022-04-12

Initial release of LV firmware for the new AP+ V1.5 hardware platform.

- **Configurations**
  - This firmware supports the following products/models/IMUs. Any given model supports all the IMU types belonging to lower level models as well, accessible via a drop down menu on the GUI or by sending a command message.

AP+18 LV	no remote IMU, onboard IMU 79
AP+20 LV	remote IMU 90, onboard IMU 79
AP+30 LV	remote IMU 82, onboard IMU 79
AP+50 LV	remote IMU 91, onboard IMU 79
AP+60 LV	remote IMU 57, onboard IMU 79

- **IMU**
  - Raw IMU data is logged for both the onboard and remote IMUs whenever logging is enabled.

  - Real time navigation may be selected to use either the onboard or remote IMU. A flag is embedded in the logged data that indicates to POSPac which IMU was used in real time so the data may be displayed appropriately.

  - In AP+ V1.5 the remote IMU uses the Rx portion of COM 2 as described in the Integration Manual, however, low rate user output may be configured on COM 2.

- **Control and Configuration Interface**
  - All installation parameters can be set, and control actions initiated, via the web based GUI. For OEM integration there are a set of messages that may be sent to AP+ that replicate all the features available on the GUI. Refer to *PUBS-ICD-006559 – AP+ Interface Control Document* for details.