



Date: August 9th, 2016
Subject: New SP80 Firmware Release
Product: SP80
Version: 3.10

Introduction

This document is the firmware release notes for the SP80 GNSS receiver. Firmware version 3.10 is a major release with new features, improvements and bug fixes.

Upgrade Procedure

The customers can upgrade the receiver with version v3.10 by following this procedure:

- 1- Copy the file [sp80_upgrade_v3.10.tar](#) to a SD Card (its size must be at least 256MB, and it is preferable to use an empty and recently formatted SD Card)
- 2- Switch off the SP80
- 3- Plug the SP80 into an external power and make sure that there is also an internal battery
- 4- Insert SD Card to the SP80
- 5- Turn on the SP80 while keeping pressed the button 'Scroll' (during about 5 seconds)
- 6- Wait for the complete upgrade (it should take about 10 minutes)

Firmware List and Versions

General version number: [v3.10 – 07/07/2016](#)

OS: [2.6.37 #796](#)

U-Boot: [1.32](#)

PVT: [LP71V17](#)

DSP: [LC71V17](#)

SL: [LS71V24](#)

WEB Service: [LW71V05](#)

HTML Pages: [LH71V10](#)

BT: [7.2.31](#)

PMU: [3.W](#)

GSM: [02.003](#)

XDL: [V01.14\(2\)](#)

The software compatible with SP80 [v3.10](#) are:

- FAST Survey: [4.3.x](#)
- RINEX Converter: [4.6.0](#)

- Survey Pro: [5.6.4](#)
- Survey Office (64-bits): [3.50](#)
- USB Serial Emulation: [1.1](#)
- Spectra Precision Loader: [3.2.0](#)
- Spectra Precision File Manager: [1.0.10](#)

New Features

1. **UHF Networking:** the SP80 Rover is able to receive several base stations with the radio on the same frequency. It is possible to select manually the base to be used or to let the rover select automatically the best base station. The SP80 Base is configurable for the UHF Networking by adding delays in data transmission.
2. **UHF Relay Mode:** the internal XDL radio is now configurable in relay mode. In this mode, correction data can be received and retransmitted via the UHF radio.
3. **GNSS Updates**
 - a. BeiDou differential mode and positioning with BeiDou only are now supported.
 - b. Galileo is now used in RTK positioning.
 - c. IRNSS raw data is now available in the G-File but is not used in receiver positioning.
4. **Multi-Language:** the SP80 display, SMS, alarms and emails are localized in the following languages: English, French, German, Portuguese, Spanish. The language selection can be done with the SP80 display or with the command \$PASHS,LNG.
5. **WiFi Access Point;** the receiver can be now configured in WiFi Access Point. This is the default mode and it is possible to activate it with the SP80 display. When a device is connected to the SP80 by WiFi, it has access to Internet if the SP80 modem is connected to Internet. It allows connecting easily the Web User Interface of the SP80, its default IP address is 192.168.130.1.
6. **Web UI Updates**
 - a. \$PASHS or \$PASHQ commands can be sent via Web User Interface (menu Identity/Terminal Window).
 - b. Files can be copied from the internal memory to SD Card.
7. **Phone number:** The phone number recorded in the SIM Card is now displayed on the OLED screen. If the phone number is not recorded in the SIM Card, the number can be defined by the new command \$PASHS,PHN,OWN.
8. **USSD protocol:** The receiver can send USSD messages to the GSM provider in order to get info on the GSM subscription available with \$PASHS command and Web UI.
9. **Support for Trimble RTX Regional Atmospheric Corrections:** this enables the use of the Regional Atmospheric Modeling (RAM) with Trimble RTX correction services for a significant reduction in convergence time. This option is automatically enabled in the SP80 as soon as a Trimble RTX option is valid.

Improvements

1. **Web UI for smartphone:** the Web User Interface is now optimized for smartphone and data collectors.
2. **GNSS Improvements**
 - a. Galileo acquisition has been improved.

- b. All IRNSS satellites are tracked by the SP80 as more channels have been dedicated to IRNSS tracking.
3. **RTCM3.1 Type 1021 to 1029:** Transformations including only horizontal, only vertical or both vertical and horizontal, can be applied using command \$PASHS,LCS.
4. **CenterPoint RTX QuickStart:** CenterPoint RTX QuickStart is improved, allowing for <5 minute convergence when starting over a known point. The command \$PASHS,RTX,KPI allows now to enter a position in ITRF2008 for any epoch.

Resolved Problems

1. **Bluetooth Error:** Sometimes the alarm 56,BTH PIN rejected would be triggered without any reason. This problem has now been resolved.

Known Issues

1. **Firmware Upgrade:** It is not recommended to upgrade the firmware with SP Loader using the serial cable. It is recommended to use the SD Card or the USB cable.

Recommendations

1. **Beta version:** the official version contains 2 numbers (ex: 1.2). If the receiver contains a version with 3 digits (ex: 1.2.5), it means that it is a beta release and this beta release can be used only 90 days after the release date. After 90 days, the receiver will not answer to any command, and the only thing to do is to upgrade the receiver with an official version.
2. **SD Card:** the receiver supports the standard SD Card and the SDHC card up to 32Gb. It does not support the SDXC.
3. **Ionosphere activity:** Today we are at the peak of ionosphere activity which can affect/degrade receiver performance. User must realize that often 3rd party reference data provider is equally responsible for performance degradation because of generating much less correcting data compared to quiet ionosphere conditions. User is recommended also contacting Network data provider in case of RTK problems.
4. **ATL log:** We recommend end user in case of receiver performance problem to record atl.log and share it with Tech Support. W/o atl.log file, the ability to help end user will be much less.
5. **6 GNSS:** While SP80 can work with different subsets of GNSS (e.g. GLO only, BDS only, GLO+BDS), user must realize that exclusion of any available GNSS system may result in degraded positioning performance
6. **6 GNSS:** While SP80 can track and use the observables from all 6 GNSS, for differential (RTK rover) operation it can be possible only if base provides respective reference data. Today with RTCM-3.1 protocols these reference data can be available only for L1/L2 GPS and GLONASS, so SP80 cannot take a benefit of other signals. Only the following 2 cases can allow effective RTK usage of all tracking signals:
 - Using own SP80 base generating either ATOM or RTCM-3.2 (MSM) differential data
 - Using 3rd party services supporting RTCM-3.2 (MSM) data generation
7. **NTRIP:** When working with Ntrip service, user is recommended to select VRS mount point over MAC and FKP. In general with wide variety of different mount points, always try select GNSS points.

8. **RINEX:** when converting receiver raw data to RINEX it is desirably to generate RINEX-3.2 (latest released version) data as legacy RINEX-2.11 does not support many of GNSS signals SP80 tracks.

Rescue Procedure

If the receiver is in a state where it reboots continuously and it contains the U-Boot (BL2) 1.28, then the rescue procedure (see below) can be used to repair the receiver. The U-Boot 1.28 exists since the version 1.3. If an upgrade into 1.3 has been tried but failed, it is possible that the receiver contains the U-Boot 1.28 so the rescue procedure can be tried.

The rescue procedure is the following:

1. Unpack the files [sp80_rescue1.bin](#), [sp80_rescue2.bin](#), [sp80_rescue3.bin](#) into the empty SD-Card (use root folder, no subfolders). The SD Card size must be at least 256Mbytes.
2. Insert the SD-Card into the SP80
3. Power on the SP80 with pressing the scroll button (Key combination as for regular upgrade start)
4. Observe progress on the SP80 display. After procedure done the SP80 will be powered OFF automatically
5. Collect file `rescue.log` from SD-Card. It contains diagnostics what was restored during the rescue procedure
6. Remove the SD-Card and power on the SP80

Once this process is done, you must perform a normal upgrade with the file [sp80_upgrade_v1.5.tar](#) even if the version 1.3 is displayed on the screen of the SP80.