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## What's New in OEM7 FW 7.09.06

*This is a general release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7500, OEM7600, OEM7700, OEM7720, CPT7, CPT7700, PwrPak7, PwrPak7D, SMART2, SMART7.*

### New Features

- New Dispatch functionality to deliver subscriptions and software model upgrades to the receiver supports new service types and seamless trials, upgrades and renewals. Both subscriptions and software model upgrades are delivered over L-band, NTRIP, Telematics or by command.

### Notes:

Starting with FW 7.09.06, NovAtel receivers with 7.09 firmware use a new dispatch message system for correction service subscriptions. As a result, existing TerraStar subscriptions stored in the receiver will be removed when updating from earlier firmware versions. When this occurs, the subscription can be resent using one of the following methods:

- NovAtel eStore – Log in to the eStore, select My Products -> Receivers, enter the receiver serial number, and resend the subscription.
- NovAtel Application Suite (NAS) – Ensure NAS has internet access, connect to the receiver and press Subscription Resend in the Subscription Information tile.
- Machine to Machine (M2M) via TerraStar API – OEMs or integrators using the TerraStar API can resend activations programmatically.

These options ensure TerraStar service continuity after upgrading to FW 7.09.06 or later.

### Additional Firmware Updates

- Support to ITRF2020 in the list of datum transformations.
- Improvements to SPAN handling ALIGN with antennas at different heights.
- Improved INS seeding to enhance initialization.
- New capability to enable communication tunneling via ICOM ports.
- New STOP parameter added to the LUA command
- RTKIONORESILIENCE default state set to NORMAL

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## Changes to Commands/Logs

### Commands

New commands:

- DISPATCHSET

Changed commands:

- AUTH
- INSSEED
- MODEL

### Logs

New logs:

- DISPATCHMESSAGES
- DISPATCHRECEIPT
- DISPATCHSCHEDULE

Changed logs:

- TERRASTARINFO
- VERSION

## What's New in OEM7 FW 7.09.05R5

*This is an Agriculture market-specific release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7500, OEM7700, PwrPak7, SMART2, and SMART7.*

### Additional Firmware Updates

- Fix issue with unexpected resets.

### Logs

No changes to commands and logs

## What's New in OEM7 FW 7.09.05R2

*This is a general maintenance release available on these OEM7 platforms (and associated variants): PwrPak7 and SMART7.*

### Additional Firmware Updates

- Updates to comply with Radio Equipment Directive cybersecurity requirements in EN 18031

- Updates to default Wi-Fi and administrator passwords (minimum 12 characters)

## Logs

New logs:

- CYBERSECEVENTS – record of cybersecurity events

## What's New in OEM7 FW 7.09.05

*This is an Agriculture market-specific release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7500, PwrPak7, SMART2, and SMART7.*

### New Features

- Added RTKIONORESILIENCE command, which adds tuning modes to optimize RTK performance.
- Added PGN 127251 CAN message (Vessel Rate of Turn) to the list of supported NMEA2000 messages. This message complements PGN 127250 message (Vessel Heading).
  - Note: PGN 127250 and PGN 127251 require active ALIGN functionality to provide heading and heading rate information.
- Upgrades to GENERATERTKCORRECTIONS command
  - Addition of RTCM 1230 message to the list of RTK corrections messages generated for the option RTCMv3.

### Additional Firmware Updates

- Improved SPAN + ALIGN resilience in degraded GNSS environments
- CAN TP now works with the receiver CAN port configured in both J1939 and ISO11783 protocols.

## What's New in OEM7 FW 7.09.03

*This is an Agriculture market-specific release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7600, OEM7720, OEM7500, PwrPak7, PwrPak7D, SMART2, and SMART7.*

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## New Features

- Increased CCOM Ports
  - CCOM Ports increased from 6 to 9
- ITRF2020 Support
  - Datum in use for TerraStar Services has changed from ITRF2014 to ITRF2020
  - Support transformation from ITRF2014 to ITRF2020

## Additional Firmware Updates

- Improved BDS tracking

## What's New in OEM7 FW 7.09.02R1 (Update July 1, 2025)

*This is a general maintenance release available on these OEM7 platforms (and associated variants): PwrPak7, PwrPak7D, CPT7 and CPT7700.*

## Additional Firmware Updates

- Updates to comply with Radio Equipment Directive cybersecurity requirements in EN 18031
- Updates to default Wi-Fi and administrator passwords (minimum 12 characters)

## Logs

New logs:

- CYBERSECEVENTS – record of cybersecurity events

## What's New in OEM7 FW 7.09.02

*This is a general release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7600, OEM7720, OEM7500, CPT7, CPT7700, PwrPak7, PwrPak7D, GT7800.*

## Notes:

This firmware has the same features and functionality as 7.09.01 but is released for all other markets and with support for additional platforms.

## What's New in OEM7 FW 7.09.01

*This is an Agriculture market-specific release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7600, OEM7720, OEM7500, PwrPak7, PwrPak7D, SMART2, and SMART7. For agriculture customers, this release also includes [changes first introduced in 7.09.00](#).*

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## New Features

- PPP positioning improvements in environments affected by ionospheric scintillation to improve availability and accuracy of positioning:
- Improved ionospheric modeling
- Improved integrity algorithms

## Additional Firmware Updates

- PPP seeding improvements

## Changes to Commands/Logs

### Logs

New logs:

- PGN127250 Vessel Heading – support for ALIGN Heading solution
- SYNCRELINSPVACMP

Updated logs:

- PGN129029 GNSS Position - height reference updated to ellipsoidal
- LOG – ONALL trigger added

## What's New in OEM7 FW 7.09.00

*This is a general release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7600, OEM7720, OEM7500, CPT7, CPT7700, PwrPak7, PwrPak7D, GT7800.*

## New Features

- Precision Time Protocol (PTP)

## Additional Firmware Updates

- Improved time to first fix
- Improved PPP under scintillation conditions
- Improvements to SPAN initialization and performance
- Secondary SPAN solution for improved reliability in challenging conditions
- Support for the  $\mu$ IMU-IC with UART interface
- Export velocity limit increased to 600m/s
- Use of BeiDou B2b in RTK positioning
- New and improved Doppler Velocity filter
- Maximum number of logs increased to 128

- Updates to the INS position and velocity standard deviation reporting when a USER offset is applied

## Changes to Commands/Logs

### Commands

New commands:

- SETTIMESOURCE
- SET4BITSBASPREAMBLE
- USERCANCLOSE, USERCANOPEN, USERCANWRITE
- PTPMODE, PTPPROFILE, PTPTIMESCALE

### Logs

New logs:

- RXCONFIGUSER
- PTPDELTATIME
- USERCANDATA, USERCANSTATUS

## What's New in OEM7 FW 7.08.14

*This is a general release based off of 7.08.10, available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, OEM7600, OEM7720, OEM7500, CPT7, CPT7700, PwrPak7, PwrPak7D, GT7800.*

### New Features

- TerraStar C-PRO enhancements with global RTK From the Sky™ technology: improved performance and convergence using triple frequency in PPP (for OEM7600, OEM7500 and OEM7720)
- Oceanix with global RTK From the Sky™ technology for all platforms
- Store and update week number in NVM to automatically maintain GPS week era

### Additional Firmware Updates

- Store Spoofing calibration
- Fix issue with SBAS12 log
- VARF re-activated for OEM719 HW Revision 1.05
- Fix issue with BDSBCNAV1RAWMESSAGE

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## What's New in OEM7 FW 7.08.13

*This is an internal release.*

## What's New in OEM7 FW 7.08.12

*This is an Agriculture market-specific release for these platforms, based on the 7.08.10 release: SMART7, SMART7-W, and SMART7-I variants (including support for RELAY7), and OEM719. Note: Includes all features from 7.06.03, 7.08.01, and 7.08.01R1 releases.*

### New Features

- TerraStar C-PRO enhancements with improved performance and convergence using quad frequency in PPP
  - Includes BeiDou B1C, B2a, B2b, B3
  - Includes Galileo E6B
- Improved implementation of Subscription Managed Channel Configuration with TerraStar-C PRO, TerraStar-X, RTK ASSIST PRO subscriptions: Automatic activation of the advanced channel configuration when a valid subscription is activated, for the duration of the subscription period
- Improved multipath mitigation using a new correlator type

### Additional Firmware Updates

- Updates for improved tracking of the BeiDou system:
  - Use the almanac to determine the satellites in view
  - Prioritize MEO satellites for tracking
- Defaults to tracking Galileo E6B signal (previously defaulted to E6C)
- Increased idle time available
- Fix identification of QZSS and NavIC in NMEA logs
- Improved reliability when establishing a connection to the Wi-Fi access point
- Terrain Compensation log/command documentation updated to remove SMART7 base variant from the list of supported platforms

### Changes to Commands/Logs

#### Commands

Updated commands:

PPPSOURCE – TERRASTAR\_L and TERRASTAR\_C source options removed

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## What's New in OEM7 FW 7.08.11

*This is an internal release.*

## What's New in OEM7 FW 7.08.10 (revised Nov 1, 2022)

*This is a general release available on these OEM7 platforms (and associated variants): OEM719, OEM729, OEM7700, CPT7700, PwrPak7 (not including PwrPak7D), GT7800.*

### New Features

- TerraStar C-PRO enhancements with global RTK From the Sky™ technology: improved performance and convergence using quad frequency in PPP
  - Includes BeiDou B1C, B2a, B2b, B3
  - Includes Galileo E6B
- Subscription Managed Channel Configuration with TerraStar-C PRO, TerraStar-X, RTK ASSIST PRO subscriptions: Automatic activation of the advanced channel configuration when a valid subscription is activated, for the duration of the subscription period.
- Improved multipath mitigation using a new correlator type
- Support OEM719 HW Revision 1.05
- Support OEM729 HW Revision 2.10

### Additional Firmware Updates

- For the BeiDou system:
  - Use the almanac to determine the satellites in view
  - Prioritize MEO satellites for tracking
- Defaults to tracking Galileo E6B signal (previously defaulted to E6C)
- The COM2 TX pin (TXD2) can no longer be configured to output a periodic pulse and instead will be solely dedicated to the primary COM2 transmit data function on the OEM719
- Connect to newly inserted USB stick while operating
- Fix identification of QZSS and NavIC in NMEA logs
- Increased idle time available
- Update WIFI package to v1.7.12



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## Changes to Commands/Logs

### Commands

New commands:

- LOCKOUTSATELLITE, UNLOCKOUTSATELLITE

Updated commands:

- COMCONTROL

### Logs

New logs:

- BDSBCNAV1EPHEMERIS, BDSBCNAV2EPHEMERIS, BDSBCNAV3EPHEMERIS, BDSBCNAV1RAWMESAGE, BDSBCNAV2RAWMESAGE

## What's New in OEM7 FW 7.08.09R1

*This is a general release available on these OEM7 platforms (and associated variants): PwrPak7D.*

### Additional Firmware Updates

- Update WIFI package to v1.7.12
- Fix issue with INSCOMMAND and CONNECTIMU commands

## What's New in OEM7 FW 7.08.09

*This is a general release available on these OEM7 platforms (and associated variants): OEM719, OEM729.*

### New Features

- Support OEM719 HW Revision 1.05
- Support OEM729 HW Revision 2.10

### Additional Firmware Updates

- The COM2 TX pin (TXD2) can no longer be configured to output a periodic pulse and instead will be solely dedicated to the primary COM2 transmit data function on the OEM719

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## Changes to Commands/Logs

### Commands

Updated commands:

- COMCONTROL

## What's New in OEM7 FW 7.08.08

*This is an internal release.*

## What's New in OEM7 FW 7.08.07

*This is an internal release.*

## What's New in OEM7 FW 7.08.06

*This is an internal release.*

## What's New in OEM7 FW 7.08.05

*This is an internal release.*

## What's New in OEM7 FW 7.08.04

*This is an internal release.*

## What's New in OEM7 FW 7.08.03

*This is an internal release.*

## What's New in OEM7 FW 7.08.02 (updated June 2021)

*This is a general release based on 7.08.00 for these OEM7 platforms: CPT7 (all versions), CPT7700*

### New Features

- Support for new CPT7 hardware and the CPT7700, with the following functionality:
  - Internal data logging
  - Wheel sensor support (DMI)
  - New enclosure LEDs
  - Added Event 3 In/Out support
  - Support for the HG4930\_AN04 IMU

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## Additional Firmware Updates

- Improvements to SPAN azimuth performance

## What's New in OEM7 FW 7.08.01

*This is an Agriculture market-specific release for these platforms, based on the 7.08.00 release: SMART2, SMART7 (all variants, including support for RELAY7), OEM719, OEM729, OEM7700 and OEM7500. Note: Includes all features included in the 7.06.03 (SMART7) and 7.06.02 (SMART2) releases.*

## New Features

- TerraStar-C PRO now supported on SMART2
- Use of BeiDou Phase III B1C and B2a in GLIDE
- Two-stage zeroing calibration for Terrain Compensation
- PPPSEED MANUAL command for manual PPP seeding in restricted movement conditions

## Additional Firmware Updates

- Major improvements on PPP seeding robustness and reliability
- PPP quality indicator / standard deviation improvements
- PPP robustness improvements and fast recovery from erroneous seeding
- Support for Datum and plate tectonics correction for SPAN and ALIGN
- In RTK or PSRDIFF modes, correctly ignore datum transformation as the source datum is not known to the rover receiver
- Prevention of incorrect INS seeding for SPAN capable enclosures when inverted using SETALIGNMENTORIENTATION
- General robustness improvements for SPAN Agriculture profile
- Improved false alarm rate on automatic interference detection

## Changes to Commands/Logs

### Commands

Updated commands:

- PPPSEED
- TILTZERO

### Logs

New logs:

- TILTDATA

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## What's New in OEM7 FW 7.08.00 (revised Nov 1, 2022)

*This is a general release available on these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7500, OEM7600, PP7, PP7D, CPT7.*

### New Features

- Track BeiDou B2b signal
- Support PwrPak7Q-E2 and PwrPak7DQ-E2, with no Wi-Fi
- Spoofing detection on GPS L1 C/A signals

### Additional Firmware Updates

- Change in all channel configurations for models that support BeiDou
  - Increase number of BeiDou satellites tracked
  - Dual frequency models now track BeiDou B2b instead of B2a
  - All full frequency models now include BeiDou B2b
- Provide navigation data from BeiDou B1C and B2a signals
- Use of BeiDou B1C and B2a in RTK positioning
- Datum Handling (released)– Ability to transform between different datums to allow interoperability between different position engines
- Enhanced generic IMU support
- Load new firmware stored from internal memory
- Ability to establish multiple ethernet connections to a receiver
- Fixed issue with ITSPECTRALANALYSIS command
- Improved SPAN performance
- Use of OUTPUTDATUM command applies to all position types

### Changes to Commands/Logs

#### Commands

New commands:

- SETALIGNMENTORIENTATION

Updated commands:

- SOFTLOADFILE
- SETINSROTATION
- EXTERNALPVAS

Removed commands:

- DIFFCODEBIASCONTROL – This command will no longer be supported

## Logs

New logs:

- BDSBCNAV1EPHEMERIS, BDSBCNAV2EPHEMERIS
- PDPDATUMINFO, PSRDATUMINFO, RTKDATUMINFO, INSDATUMINFO
- INSVELUSER

Updated logs:

- GPGRS, GPGSV

## What's New in OEM7 FW 7.07.04

*This is a general release based off of 7.07.03 for these OEM7 platforms: PP7, PP7D.*

### New Features

- Support for all variants of the PP7 family with no WIFI and no internal memory

### Additional Firmware Updates

- Improved ordered NMEA log sequence

## What's New in OEM7 FW 7.07.03 (updated)

*This is a general release based off of 7.07.01 for these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7500, OEM7600, PP7, PP7D, CPT7, GT7800.*

### New Features

- TerraStar-X is now supported with a subscription and a receiver model that is unlocked for RTK.
- Support for the PwrPak7-E2 (with Epson370 IMU) and all variants
- Output information for use in interference location detection

## What's New in OEM7 FW 7.07.02

*This is an internal release.*

## What's New in OEM7 FW 7.07.01

*This is a general release based off of 7.07.00 for these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7500, OEM7600, PP7, PP7D, CPT7, GT7800.*

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## New Features

- SPAN Marine Profile
- SPAN Rail Profile
- PP7 WiFi Client

## Additional Firmware Updates

- Improvements to the SPAN system convergence robustness and efficiency
- Epson G320 IMUs support 200Hz data rate

## Changes to Commands/Logs

- Final removal of deprecated OEM6 SPAN logs and commands as outlined in the *OEM6 to OEM7 Integration Guide*

## Commands

New commands:

- SPAN: SETIMUEVENT, RAWDMI, DMICONFIG

Removed commands:

- SPAN: ASYNCHINSLOGGING, SETWHEELPARAMETERS, WHEELVELOCITY, HEAVEFILTERLogs

New logs:

- SPAN: INSPVASDCMP, INSPVACMP, CORRIMUS, RAWDMI

Updated logs:

- INSCONFIG – can now be logged ONTIME

Removed logs:

- SPAN: CORRIMUDATA, CORRIMUDATAS, TIMEDWHEELDATA, WHEELSIZE

## What's New in OEM7 FW 7.07.00 (updated May 2021)

*This is a limited release without SPAN support available on these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7500, OEM7600, PP7, PP7D (not including PP7-E1 or PP7D-E1). Note: All changes since 7.05.00 are included in this release with the exception of 7.06.02.*

## New Features

- Introduce configurations with L5, E5a and B2a frequencies on the OEM7500
- Improved signal acquisition with better Time to First Fix (TTFF)

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## Additional Firmware Updates

- Compliant to NMEA 4.10
- Track Galileo E6 signal (not used in positioning)
- Track BeiDou B1C and B2a (not used in positioning), with no navigation data from these signals
  - Addition of B1C tracking channels to dual and full frequency models, in channel configurations 4&5
- Ability to track BeiDou PRNs > 30 (not used in positioning)
- Improved multifrequency RTK ambiguity resolution
- CAN port assignments on OEM7500 changed so that CAN0 port maps to physical port CAN1
- For the BeiDou system, use the ephemeris to determine the satellites in view
- TRACKSIGNAL command to disable non primary signal types
- Addition of NavIC L5 channels to the MF models in channel configurations 4&5 (not used in positioning by default)
- Reset data in ITK logs when ITK filters are disabled
- Improved interference detection thresholds
- Beta Feature: Basic CAN Read/Write support
- Accept the ASSIGNALL SBAS command on dual antenna receivers
- Respond with “ok” when an UNLOG command for a command not currently logged is received

## Changes to Commands/Logs

### Commands

New commands:

- NMEA: NMEABEIDOUTALKER
- ITK: ITWARNINGCONFIG
- RTK: RTKTRACKINGCONTROL, RTKTRACKINGCONTROL
- CONFIGCODE
- TRACKSIGNAL
- DOPPLERWINDOW
- APPROXPOSTIMEOUT
- DUALANTENNAALIGN
- PNGCONFIG

Updated commands:

- CLOCKOFFSET – increased offset field range

Removed commands:

- ITK: ITINTERFERENCEDETECT

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## Logs

New logs:

- Galileo Navigation data: GALFNAVRAWALMANAC, GALFNAVRAWEPHEMERIS, GALINAVRAWALMANAC, GALINAVRAWEPHEMERIS
- PPP: PPPSEEDAPPLICATIONSTATUS, PPPSEEDSTORESTATUS
- ITK: ITPSDDETECT

Updated logs:

- PASHR