Please refer to the NovAtel documentation portal, found here: http://docs.novatel.com/OEM7 for detailed information on the commands and logs.

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.

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

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

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

Logs

New logs:

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

Updated logs:

- PASHR

What's New in OEM7 FW 7.06.02

This is an Agriculture market specific release for the SMART2

New Features

- Support the SMART2 product

Additional Firmware Updates

- For the BeiDou system, use the ephemeris to determine the satellites in view

Changes to Commands/Logs

Commands

New commands:

- Bluetooth commands: BLUETOOTHCONTROL

Logs

New logs:

- Bluetooth logs: BLUETOOTHNAME

What's New in OEM7 FW 7.06.01 (April 30, 2019)

This is an Agriculture market specific release for these OEM7 platforms, based off of the 7.05.01 release: SMART7 (all variants), OEM719, OEM7700, OEM7500 and support for Relay7

New Features

- Terrain Compensation – Corrects for uneven terrain by compensating for vehicle pitch and roll
- Tectonic Plate – Compensates for region specific tectonic plate movements when using TerraStar services
- Beta Feature: Datum Handling – Ability to transform between different datums to allow interoperability between different position engines
    - Note: This feature is not available with ALIGN Relative Positioning

Additional Firmware Updates

- Automatic activation of the advanced channel configuration when a valid TerraStar-C PRO subscription is activated
- Support for TerraStar-X technology
- Changed the default sensitivity level used to set the receiver status jammer bit to the least sensitive setting
- 5 L-Band channels activated
- Report RxStatusEvents for events that occur early during receiver boot up
- Resolve position bias during Propagated state when using GLIDE
- Improved L-Band performance during interference on the OEM7500

Known Issues

- The OUTPUTDATUM command should not be used with ALIGN Relative Positioning.
- Neither the OUTPUTDATUM command or DATUM command should be used for ALIGN with SPAN INS

Changes to Commands/Logs

Commands

New commands:

- Automatic activation of the channel configuration for TerraStar-C PRO: TERRASTARAUTOCHANCONFIG
- Tectonic Plate: TECTONICSCOMPENSATIONSOURCE
- Datum Handling: DATUMTRANSFORMATION, GEODETICDATUM, OUTPUTDATUM
- Terrain Compensation: TILTFILTER, TILTZERO, TILTCOMPENSATIONCONTROL, $PMDT
- Receiver status jammer sensitivity configuration: ITWARNINGCONFIG

Logs

New logs:

- Tectonic Plate: TECTONICSCOMPENSATION
- Datum Handling: BESTDATUMINFO, BESTGNSSDATUMINFO, PPPDATUMINFO, DATUMTRANSFORMATIONS, GEODETICDATUMS

Log modifications:

- VERSION: Report the enclosure type in the “model” field for the “enclosure” entry
- BESTPOS, BESTXYZ, BESTUSM: When these logs contain a Terrain Compensated position, bit 7 (mask 0x80) of the Extended Solution Status will be set to 1
- GLL, RMC (NMEA0183 logs): The values reported in these logs are referenced to the current User Datum (instead of WGS84 service datum only)
- PGN129025, PGN129027, PGN129029 (NMEA2000 logs): The values reported in these logs are referenced to the current User Datum (instead of WGS84 service datum only)
- MARK2POS, MARK3POS, MARK4POS: The values reported in these logs are referenced to the current User Datum (instead of WGS84 service datum only). Note: MARKPOS already behaves this way.

What's New in OEM7 FW 7.06.00

This version was not released.

What's New in OEM7 FW 7.05.04 (January 22, 2018)

This is a release for these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7600, OEM7500, PP7, PP7D, CPT7 based off of 7.05.00

New Features

- Introduce configurations with L5 & E5a frequencies on the OEM7700, OEM7720
- Provide GPS + NavIC L5 configuration with single point positioning
- Allow up to 5 user defined antenna types to be used with the THISANTENNATYPE and BASEANTENNATYPE commands

Additional Firmware Updates

- Change the default tracking of E6 to the pilot signal
- Increase to 8 NavIC L5 channels on applicable models
- Fix issues with the ITPROFILTCONFIG command
- Handle IMU data from KVH1750, IMAR FSAS and IMU-CPT when starting over a week rollover

Changes to Commands/Logs

Commands

New commands:

- ANTENNATYPE

Updated commands:

- THISANTENNATYPE

- BASEANTENNATYPE

Logs

New logs:

- GPSCNAVRAWMESSAGE
- QZSSCNAVRAWMESSAGE
- USERANTENNA

What's New in OEM7 FW 7.05.03

This is an internal release.

What's New in OEM7 FW 7.05.02

This version was not released

What's New in OEM7 FW 7.05.01 (Sept 24, 2018)

This is an Agriculture market specific release for these OEM7 platforms: SMART7 (and variants)

New Features

- Release of the SMART7 products
- SMART7 WIFI supports access point, client and concurrent mode
- Support for Relay7

Additional Firmware Updates

- The available command set for this release is tailored specifically to the Agriculture market
- Update PGN129027 message to align with OEM6

What's New in OEM7 FW 7.05.00 (July 17, 2018)

This is a general release for these OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720, OEM7500, PP7, PP7D, CPT7

New Features

- TerraStar-C PRO
- RTKAssist PRO
- Galileo measurements used in position solution
- User application API using LUA scripting language
- Track Galileo E6 signal (beta, not used in positioning)
- Track BeiDou B1C and B2a (beta, not used in positioning)

Software Improvements

- TerraStar-C enhancements
- TerraStar-C marine support
- Improvements to Glonass LC tracking performance on 7720 secondary antenna
- Improved L-Band acquisition/tracking
- Improved GPS and QZSS L1C tracking
- Improved B3 tracking
- Improved Align stability

INS Improvements

- Improvements to INSSEED functionality
- Can complete INS alignments on a rotating gimbal platform
- EXTERNALPVAS messages can handle velocity input in the vehicle frame

Additional Firmware Updates

- GLIDE recovery improvements following complete signal blockages
- USB COM port connections and communications have been made more robust
- L-Band beam table update for new frequencies
- When EventOut signals are to be synchronized to the 1PPS signal, transitions on the EventOut outputs do not occur until time is set.
- Corrected a problem where hardware flow control did not work on the OEM729 receivers
- Corrected issue where GPS and SBAS C/No's were not reported in the GPGSV log
- Corrected issue where Galileo and BeiDou 'signals used' mask was not populated in the MARKPOS and BESTUTM logs
- New RXStatus bit to indicate when IMU performance is detected out of bounds
- BESTPOS behavior improved for INS selection.
- Fixed issue where saving a CONNECTIMU command to NVM failed intermittently
- Fixed occasional duplicate TIMEDWHEELDATA messages when using PP7D
- Fixed issue where automatic body to vehicle (Rbv) calibration was not working properly
- Fixed cumulative tick count rollover issue for wheel sensors
- Determine a fixed AR in RTK mode for GPS L1&L2, GLONASS L1&L2, Galileo E1&E5b and BeiDou B1&B2 when all frequencies are in use

Changes to Commands/Logs

Commands

New commands:

- FORCEGALE6CODE
- LUA
- SURVEYPOSITION
- USERI2CREAD
- USERI2CWRITE

Command Modifications:

- Added Galileo E6B and E6C, BeiDou B1C and B2a enums to applicable commands

Logs

New logs:

- GALCNAVRAWPAGE
- User App API logs: LUAFILELIST, LUAFILESYSTEMSTATUS, LUAOUTPUT, LUASTATUS
- SAVEDSURVEYPOSITIONS
- USERI2CRESPONSE

Log Modifications:

- Added Galileo E6B and E6C, BeiDou B1C and B2a to applicable logs

What's New in OEM7 FW 7.04.01 (July 3, 2018)

This is a release specific to the OEM7600, based off of 7.04.00

New Features

- Release of the OEM7600 platform with ITK mitigation

Additional Firmware Updates

- Updated LBANDBEAMTABLE to include stage 2 frequencies

What's New in OEM7 FW 7.04.00 (February 22, 2018)

This is a general release for all OEM7 platforms: OEM719, OEM729, OEM7700, OEM7720

New Features

- Oceanix Correction Service

  Oceanix correction service delivers exceptional sub-decimetre positioning for diverse marine applications including dredging, hydrographic survey and mapping. Oceanix is delivered globally via 7 geostationary satellites and via NTRIP for maximum availability. It also enables RTK assistance to seamlessly handle RTK correction outages. With multiple L-Band processing and overlapping satellite coverage, Oceanix delivers assured precise positioning globally.

  For more information, please visit: https://www.novatel.com/products/correction-services/oceanix/

- Script Engine (Lua) for Customer Application Support (beta)
- PwrPak7D and PwrPak7D-E1 product support

INS improvements

- Update TSS1 logs Heave data to use Synchronous Heave data, allowing higher logging rate for the heave field.
- New command INSALIGNCONFIG to configure the SPAN/Align operation. Meant to simplify existing separate ALIGN and SPAN commands.
- EXTERNALPVAS improvements

ITK improvements

- New Wide range automatic gain control (WRAGC) that improves automatic gain control under interference conditions
- Outputs the absolute interference power for detected in-band interference (in new ITDETECTSTATUS log)
- Detects out-of-band interference (output in new ITDETECTSTATUS log)
- Improved interface to configure interference detection (ITDETECTCONFIG replaces ITINTERFERENCEDETECT)

Additional Firmware Updates

- GLONASS constellation robustness
- USB Driver improvements
- PP7 File transfer improvements
- Changes to Commands/Logs
- Common Flash Interface

Commands

New commands:

- ITK related commands: ITDETECTCONFIG, RFINPUTGAIN
- FILEDELETE
- INSALIGNCONFIG

Deleted commands:

- DUALANTENNAPORTCONFIG, ITINTERFERENCEDETECT

Logs

New logs:

- Oceanix Correction Service related logs: OCEANIXSTATUS, OCEANIXINFO
- INS related logs: INSATTQS, INSSEEDSTATUS
- ITK related logs: ITDETECTSTATUS
- RAWSBASFRAME2

What's New in OEM7 FW 7.03.00 (June 30, 2017)

This is a general release for all OEM7 platforms: OEM719, OEM729 and OEM7700

New Features

- NavIC L5 tracking

New Features for INS

- SPAN Land Vehicle LAND_PLUS profile type
- Direct connection via SPI to the following IMUs
    - ADIS16488
    - EPSON G320N
- Direct connection via RS422 to the STIM300 IMU
- Attitude output now available in Quaternions (INSATTQS log)
- Static alignment routine robustness improvements. Can now specifically select STATIC or KINEMATIC alignment routines

Software Improvements

- Increased number of ICOM ports to 7

INS improvements

- Improvements to INS Seed functionality - new status log INSSEEDSTATUS available
- SETINITATTITUDE can now be sent before the INS state is ready to align. The latest entered value held and injected when appropriate
- Simplified gimbal mount frame definition
- PASHR log definition updated to include INS status flag

Additional Firmware Updates

- Resolved UTC millisecond rounding issue in TIME log
- Improved cross-correlated signal detection
- Improved ITPSDFINAL log robustness
- Improved receiver tracking robustness on reboot
- Improved BESTPOS selection of RTK ASSIST NARROW_INT positioning when available
- Improved BESTPOS standard deviation reporting when doing RTK with GLIDE as fallback
- Improved BESTPOS performance after periods of signal outage
- GPGGALONG now applies DATUM selection, matching GPGGA
- UNLOCKOUT, UNLOCKOUTALL and UNLOCKOUTSYSTEM added to SAVECONFIG
- Default ETHCONFIG is now in power-saving mode by default

Additional INS Updates

- INS calibration updates (for RBV calibrations)
    - An initial estimate is now required from the user prior to initiating the calibration
    - Improvements for non-standard IMU orientations
    - Fixed a few minor reporting discrepancies

Changes to Commands/Logs

Commands

New commands:

- NavIC related commands: NAVICECUTOFF

Deleted commands:

- USB related commands: USBCONFIG, SAVEUSBCONFIG

Logs

New logs:

- NavIC related logs: NAVICALMANAC, NAVICEPHEMERIS, NAVICIONO, NAVICRAWSUBFRAME, NAVICSYSCLOCK
- INS related logs: INSATTQS, INSSEEDSTATUS

What's New in OEM7 FW 7.200 (January 31, 2017)

This is a general release for all OEM7 platforms: OEM719, OEM729 and OEM7700

New Features

- Interference Toolkit with manual mitigation - Allows the user to visually represent the RF spectrum levels to detect and manually mitigate RF interference. The receiver is able to auto detect in-band interference and will report it in the RXSTATUS log.
- TerraStar-L service - TerraStar-L is a new 40 cm Precise Point Positioning (PPP) correction service. TerraStar-L is a subscription based correction service that is delivered globally via satellites.
- RTK Assist – Provides RTK level accuracy for up to 20 minutes of interrupted RTK corrections with a valid RTK Assist subscription.
- Track the L3 GLONASS L3 CDMA signal - No navigation data is currently decoded. This is currently considered an experimental signal and is intended for research purposes.
- Improved GPS L1 acquisition time – Beta feature. Command configurable to change the acquisition method to improve GPS L1 acquisition time.
- Tracking multiple L-Band beams – All models are capable of tracking up to 3 L-Band signals simultaneously. This changes the behavior of the ASSIGNLBANDBEAM AUTO command.
- Dynamic PPP Seeding – Provides the PPP engine with an initial position even when the receiver is in motion through the PPPDYNAMICSEED command.

New Features for INS

- Addition of PROFILES for SPAN - LAND profile (otherwise known as Dead Reckoning), as well as basic support for other profiles
- Support for fast INS initialization from NVM (through the INSSEED command)

- Support for the NG LITEF µIMU IMU
- Support for the Epson G320 IMU

Software Improvements

- Improvements to the C/No measurements for all signal types (except L2 P(Y))
- Improvements to Steadyline
- Automatic fall back to internal TCXO when external clock is disconnected, and automatic re-connect when the same external clock is re-connected
- Improvements to the CAN interface:
    - Full support for NovAtel commands and logs using standard J1939/ISO-11783 Transport Protocols, including firmware upgrade using SoftLoad
    - Support for receiving and transmitting corrections, including Align, over CAN
    - Operation at baud rates up to 1Mbps
    - NMEA2000 standard logs at configurable rates

INS improvements

- Robustness improvements to kinematic alignment routine
- Roll/Pitch now output before full initial alignment
- Performance improvements to Relative INS
- Enhanced extended solution status in 'X' logs
- Major setup command changes

Additional Firmware Updates

- GPGGA log – Correct (from 7.100) the precision of the fields to conform to the NMEA standard
- Fix the default INTERFACE mode for COM3 on the OEM729 to NOVATEL
- Fixed issue with the LOG <message> ONMARK trigger, where the first output log was output immediately, rather than on the next MARKOUT
- Fix issue with tracking an unhealthy GLONASS satellite when TRACKSV GLONASS ANYHEALTH command issued

Changes to Commands/Logs

Commands

New commands:

- Interference Toolkit commands: ITBANDPASSCONFIG, ITFRONTENDMODE, ITINTERFERENCEDETECT, ITPROGFILTCONFIG, ITSPECTRALANALYSIS
- INS related commands: INSCALIBRATE, INSSEED, SETINSPROFILE, SETINSROTATION, SETINSTRANSLATION
- CAN related commands: CANCONFIG, CCOMCONFIG, J1939CONFIG
- Secure RTK related commands: GENERATESRTKCORRECTIONS, SRTKSETKEY, SRTKSUBSCRIPTION
- NMEA related commands: NMEAFORMAT, PGNCONFIG

- PPP related commands: PPPBASICCONVERGEDCRITERIA, PPPDYNAMICSEED, PPPRESET
- USB configuration commands: SAVEUSBCONFIG, USBCONFIG
- RTK related commands: REFERENCESTATIONTIMEOUT, RTKPORTMODE, RTKRESET
- NVMUSERDATA

Deleted commands:

- RTCM related commands: SETRTCM16, SETRTCM36, SETRTCMRXVERSION, SETRTCMTXVERSION
- L-Band related commands: ASSIGNLBAND, ASSIGNLBAND2, OMNIUSEGLONASS
- RTK related commands: RTKCOMMAND, RTKELEVMASK
- INS related commands: LEVERARMCALIBRATE, RVBCALIBRATE, SETGIMBALORIENTATION, SETIMUORIENTATION, SETIMUTOANTOFFSET, SETIMUTOANTOFFSET2, SETIMUTOGIMBALOFFSET, SETINSOFFSET, VEHICLEBODYROTATION, GIMBALSPANROTATION, EXTHDGOFFSET, SETMARK1OFFSET, SETMARK2OFFSET, SETMARK3OFFSET, SETMARK4OFFSET, INSPHASEUPDATE, INSZUPTCONTROL, INSWHEELUPDATE
- APPLYVEHICLEBODYROTATION
- DGPSEPHEMDELAY
- PDPVELOCITYOUT
- SETCANNAME

Logs

New logs:

- Interference Toolkit logs: ITBANDPASSBANK, ITFILTTABLE, ITPROGFILTBANK, ITPSDFINAL
- INS related logs: INSCONFIG, INSUPDATESTATUS, INSSTDDEV
- CAN related logs: J1939STATUS
- Secure RTK logs: SRTKSUBSCRIPTIONS
- Navigation data logs: GALFNAVEPHEMERIS, GALINAVEPHEMERIS, LBANDRAWFRAME
- RANGECMP4
- MODELFEATURES
- RTKASSISTSTATUS

Deleted logs:

- CMR related logs: CMRDESC, CMRGLOOBS, CMROBS, CMRPLUS, CMRREF
- L-Band related logs: LBANDINFO, LBANDSTATS, OMNIHPPOS, OMNIHPSATS, OMNIVIS, RAWLBANDPACKET
- INS related logs: INSCOV, INSCOVS, BESTLEVERARM, BESTLEVERARM2, IMUTOANTOFFSETS, INSUPDATE

- RTCA related logs: RTCA1, RTCAEPHEM, RTCAOBS, RTCAOBS2, RTCAOBS3, RTCAREF, RTCAREFEXT
- RTCM related logs: RTCM1, RTCM3, RTCM9, RTCM15, RTCM16, RTCM16T, RTCM1819, RTCM2021, RTCM22, RTCM23, RTCM24, RTCM31, RTCM32, RTCM36, RTCM36T, RTCM59, RTCM59GLO, RTCMOMNI1
- GPGGARTK
- HEADING
- PSRTIME
- SATVIS

What's New in OEM7 FW 7.102 (September 23, 2016)

General Release (supports all OEM7 platforms)

- Resolves an issue with the BASEANTENNATYPE and THISANTENNATYPE commands
- Minor tracking enhancements

What's New in OEM7 FW 7.1

FW 7.1 represents the first release for the OEM7 GNSS boards.

- Note: FW 7.1 will not run on OEM6/OEMV GPS boards.