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Eagle Point Solution to a Frequently Asked Question

Enhancements since *SMI Version 8.0*

Summary:

This document provides a list of enhancements since *SMI Version 8.0*.

Product: SMI Version 8.0

Platform:

Related documents:

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As always, should you have any questions regarding any phase of installation, contact Eagle Point Technical Assistance at (800) 477-0909.

Note: This enhancement lists starts with the most current enhancements made.

Version 8.0k

- The StarFire satellites will now display in the GPS Status command when using StarFire receivers and the StarFire satellites are visible.
- The built-in Transfer commands now support importing and exporting of the Backup.48d files.
- The GGA GPS driver now functions properly.
- The GGA shot qualities for RTK fix vs. float are correct. RTK fix is 5 and Float is 4.
- The Insufficient Memory errors with some of the Construction commands.
- Added 59 new Servo/Instrument Functions to the Favorite and Function Key commands.
- Added a new category for Servo/Instrument Functions to the Favorite and Function Key commands.
- Transfer - Import Jobs - Chains: When importing chain files created from other design software, right and left templates are sometimes created with unnecessary slope or offset records or even extra stations that follow a linear transition between stations. SMI now reads each chain file prior to be imported and optimizes the file, reducing the size of the file and improving performance when staking without affecting the accuracy of the chain.

The original chain file is renamed with a CHB extension (Chain Backup) and kept in the same folder as the optimized chain which is named with the proper CH extension. This does not affect chains transferred via SMI Transfer, as the chain must be imported using the Transfer - Import Jobs command usually located along the top of Classic SMI for it to be optimized. You may however export the chain using Transfer - Export Jobs to the device, then re-import the chain using the Transfer menu.

Version 8.0j

- One of the strengths of SMI products has been to help you perform your work with the fewest keystrokes possible. SMI continues to build on this strength with release 8 of SMI. The Version 8 SMI release centers the bulk of the functionality within the Classic SMI interface environment, which is very similar to the super efficient RPL interface with which so many of you are already familiar. Additionally, you can easily create your own command shortcuts using the function keys / command keys on your data collector or by using the Command Favorites menu. Command Favorites is a customizable screen menu that puts your most commonly used commands only two taps away.

If you are using the Allegro or Jett-ce you will want to “Auto Hide” the Taskbar so you can see the F6 – F10 command key assignments. To do this click START > Settings > Taskbar > AutoHide. You can then bring up the Taskbar by tapping on the very bottom of the touch screen or by pressing on the:

- Allegro, BLUEKEY + START (directly below the ENTER key)
 - Jett-ce, BLUEKEY + 0 (Zero Key)
- The Allegro CX MicroMonitor Firmware version 2.0 Update is an enhancement that improves the performance and speed of the Allegro CX. Applying this update speeds up the applications that run on the Allegro CX and increases the overall performance of the unit. The memory bus speed has been increased to improve overall application performance, the PCMCIA timings have been changed to speed up PC cards and the C_Drive has been improved to shorten access times. This update also includes an Operating System control panel applet that allows a user more control over system performance and battery life to better meet individual needs.

Download this uMon_Update_Installer.exe file to your desktop PC, and then double-click on the file to extract the Allegro CX installation files. Detailed install instructions open automatically when the file is extracted.

- The Export RAW problem when it says there is no RAW data for the job when using the built-in Transfer command has been resolved.
- The problem where the RAW data seems to stop recording has been resolved.
 - View RAW will now show all the RAW data for the job
 - The built in Export RAW will export all the RAW data for the job
- The Geoid status display problems have been fixed.
- When exporting chain files the filenames will not have the SMITFRTMP prefix on the files.
- Geodimeter 600 and Trimble 5600 instruments will not search when the prism gets obstructed while using real-time stake or graphical stakeout.

Version 8.0i

- Two Technologies has updated the Jett-ce operating system to version 4.20.087. All Jett-ce units manufactured after May 26, 2005 are equipped with the operating system version 4.20.087. The Jett-ce operating system version 4.20.087 includes the following updates:
 - Fix for the hidden taskbar lockup at boot up.
 - Fix for the Bluetooth lockup from the device being suspended and restarted repeatedly.
 - Added "Sticky Key" functionality for Blue key.
 - Added the Transcriber program (handwriting recognition).

If you have purchased a Jett-ce data collector prior to May 26, Eagle Point will be sending you an operating system upgrade. Eagle Point will follow up to assist you in the updating process of your data collector(s) or

answer any questions you may have. Even though the process of updating users has already begun, it may be 30 days before you receive your update.

- The Jett-ce data collector now produces audible cues when performing operations or errors occur.
- The Select Coordinate System dialog will now only display the coordinate system groups that are installed. The Installation will not install files for coordinate systems outside of North America unless the World option is chosen.
- The 2-corner, 3-corner and Point on Grade commands have been added to Construction. These commands will be available for Construction, Construction with GPS/ Robotic and DOT.
- SMI Flex GPS Enhancements:
 - Solid Earth Tide (SET) corrections will now be applied to a StarFire Base as well as a StarFire Rover.
 - Added a new Quickstart command (QUIK) to the instrument function menu for the StarFire receivers. Running this command will not change any base parameters.
- The Settings command will immediately apply the changes for the Com port and baud rate. You will no longer need to exit the software and restart for the changes to take place.
- Bluetooth communication lock up errors caused by being out of range or Bluetooth being unavailable have been corrected.
- In Command Favorites and Command Keys modifications will now get saved to the specified menu.
- In Command Favorites and Command Keys the Delete command will now permanently delete the specified menu from the list.
- Graphical Stakeout will now start shot requests for the Topcon Total Station instrument when the command opens.
- Speed improvements have been made for the Javad instrument driver. This reduces the time required to obtain a position for many commands.

Version 8.0h

- We have doubled the number of points that can be stored in a single storage file. If your device has sufficient room, you can change the storage file size to 4 MB. To do this go to File > Settings > Size of Storage File. This larger storage file size allows for storage of over 46,000 points depending on the SMI toggles like Elevation, Notes, and Raw. You will need to reset your device for this change to take effect.
- The maximum number of commands available in each "Command Favorites" menu has been increased to 50.
- We added 15 additional commands to the default Command Favorites Calculator menu.
- On the SMI Jett-ce, the Random Points (RPTS) key will automatically set the ALPHA mode toggle on. This allows for quicker access to the Backspace function, which requires the ALPHA key to be active on the Jett-ce data collector.
- SMI Flex GPS Enhancements:
 - With either the NCT or NCTG driver active the new NMEA command is available under INFN (Instrument Functions Menu). This new function allows the SMI Flex GPS system to be used with NMEA compliant software programs. For example: ESRI's ArcPad and DeLorme mapping products. The current baud rate will remain unchanged (typically 19200) and will need to be verified in the NMEA software.

Note: To return the SMI Flex GPS receiver to native mode for operation with the SMI software you

will need to run the PORTS command also in INFN prior to selecting the ROVER command. The following NMEA messages will be made available to the NMEA compliant software:GGA On Change (from once a second to 25 times a second).

- GSA every 3 seconds
 - GSV every 2 seconds
 - RMC every 5 seconds
 - VTG every 4 seconds
 - Added the ability for the SMI Flex system to work as an RTK Rover with so called VRS networks (Virtual Reference Stations). These network RTK systems typically require a position from the rover prior to generating RTK corrections for the Rover. Select the new the GGA command in INFN to start outputting the NMEA GGA message to the radio/cell modem (data port) every 30 seconds.
 - The INFN PORTS command will stop all NMEA messages when selected.
- The internal clock of SMI will synchronize its self with the data collectors BIOS clock when the device is woke up from suspend mode and when SMI starts. This resolves many time stamp related issues and allows for multiple sun shots to be performed in an 8-hour day possibly without exiting or resetting your clock.
 - The on screen Geoid on/off toggle now displays its correct state after performing an install or running the Clear command.
 - In Command Favorites and Command Keys the Delete command will now permanently delete the specified menu from the list.
 - When performing NAD-27 to NAD-83 coordinate transformations you will no longer need to install the Alaska files.

Version 8.0g

- The new Jett-ce Desktop Emulator product was added to the SMI Product line. This product can be installed by selecting "Install SMI Version 8 to PC". The Desktop Emulators contain a majority of the features found in the real field products, allowing you to perform survey calculation in the office without having the actual data collector. These emulators are also a good training tool allowing multiple users to familiarize themselves with the product prior to be required to use the system in the field.
- Leica GPS receivers:
 - Configured to use CMR corrections. This allows compatibility with SMI Flex GPS receivers using CMR corrections.
 - A new instrument function softkey of PDLCH was added, this allows SMI to set the Leica Pacific Crest PDL radio channel.
 - A new key in of LCAPDLCH was added for the new Leica Change Channel command.
 - The Leica Change PDL Channel command was added to the GPS menu group.
 - Graphical Stakeout will now update the position 5 times per second.
- Two new macros were added to switch from GPS Rover to Total Station and back both found in GPS Command Group:
 - Switch from GPS to TS.
 - Switch from TS to GPS.
- The Geoid on/off status in the GPS screen will display the correct state for all cases.

- SMI Flex GPS Enhancements:
 - The Start/Stop button now function properly in the GPS Static Logging Dialog
 - The LOG softkey in the GPS NeXT menu now starts the GPS Static Logging Dialog
 - The ITRF displacement vectors are now applied to the new Solid Earth Tide (SET) RTG navigation modes
- SMI Jett +/- key now runs the correct change sign function in all cases.
- Graphical Stakeout cut/fill will now display in the current unit when in State Plane.

Version 8.0f

- SMI Flex GPS Enhancement: GPS diagnostics now displays the NavCom firmware version installed on the connected NavCom receiver.
- The problem where pressing the ESC key multiple times unloaded the SMI product has been fixed.

Version 8.0e

- SMI has developed a new data collector aimed to satisfy SMI users wanting to upgrade to our new windows platform but desire a lower cost solution to the Allegro CX data collector. Key features of the SMI Jett-ce include.
 - Custom Keyboard / Overlay which closely resembles the HP 48 layout.
 - 10 Custom Command Keys
 - Color QVGA Touch Screen
 - 10 Hour Runtime
 - Optional Bluetooth Communications
 - 64 MB Ram and 64 MB Built-in Storage
- Support for the new NavCom 3.0.4 firmware. Version 8 will continue to support 2.23.x and previously supported firmware.
 - RTK Extend™ – Combines the capabilities of the StarFire™ global decimeter positioning system with RTK to overcome the problem of communication dropouts. The RTK Extend feature overcomes this problem by continuously computing both RTK and StarFire solutions. During periods of successful RTK operation, the system keeps the back-up StarFire solution locked to the RTK solution until needed. If the receiver loses communication with the base station, it continues to output and position with RTK accuracy using the StarFire solution for up to 20 minutes. Once the communication link is restored, the system automatically switches back to the RTK solution.
 - SureNav™ – Intelligently evaluates all combinations of single or dual frequency, 2D or 3D, type of corrections available including DGPS, WAAS/EGNOS, StarFire and RTK to select which of the 16 different operating modes will optimize performance. SureNav constantly evaluates navigation mode selection and smoothly transitions between navigation modes as appropriate. This decreases outage time in marginal signal conditions by combining single frequency and dual frequency measurements.
 - Solid Earth Tide corrections – The RTG positions are now adjusted for the effects of solid earth tides real-time. The system now models the effects of solid earth tides and automatically corrects the positions output by the receiver to remove the effects of solid earth tides on elevations.
 - Improved RTK Performance – Ability to process multi-hertz CMR corrections at the rover. Corrected compatibility issues when broadcasting CMR & RTCM corrections for use with other manufacturer's receivers. Improved ambiguity resolution at longer ranges.

- Improved Satellite acquisition – More reliable satellite acquisition in poor signal conditions.
- Internal data logging enhancements – If active, internal data logging will automatically resume following a power fail, or when the operator powers the unit off and on.
- Changed RTCM RTK Corrections Messages to 18/19 rather than 20/21 to allow for a larger list of manufacturers capable of receiving corrections from a SMI Flex GPS Base.
- NCT and NCTG Driver automatically detects StarFire receivers and doesn't prompt for internal radios if not installed.
- More values are saved to RAM allowing the receivers to power up in the exact same state they were when powered off. GEO 600 and Trimble 5600 Graphical Stakeout will now acquire first shot.
- GEO 600 and Trimble 5600 Graphical Stakeout shot update has been updated to 1 second vs. 10 seconds.
- When in a Local Coordinate System, long range East/West distances in Graphical Stakeout were off by the SMI Earth Curvature Correction. This has been resolved.
- The slow communication issue after the device goes to sleep especially noticeable with Bluetooth has been resolved. This affected all instrument drivers causing slower operation of the device.
- An issue which caused SMI Transfer to timeout with DOT versions has been resolved.
- FSPT from the staking menu and FSPT from the Construction menu were being swapped when used as custom command keys. These command are now referred to as FSPTC for Construction and FSPT for standard staking.
- Numerous other Custom Command Keys display names were updated to avoid confusion with similarly named commands.

Version 8.0d

- On the Allegro CE and CX, F6-F10 key assignments were added; now all 6 soft keys can be mapped in addition to 4 other commands.
- F11 is mapped to About Classic SMI, F12 is mapped to Show Title bar (don't run with the title bar left one because it will hide the function key mappings).
- SMI Transfer is available from within Classic SMI on all devices (allows for ActiveSync Job Transfer (USB, COM, IR), Email of Job from field (using cell modem), and IR and Wire transfer of job in field between devices)
- 2000+ Geographic coordinates systems (including NAD 27, ITRF, and UTM) The final installer may allow you to select a smaller list of coordinate systems so as to save room on the device and make selection of a system simpler. Precision was tested to 16 significant digits.
- Coordinate system conversions using all the above systems.
- Bluetooth support for IPAQ and Allegro CX.
- Support for Geoid 96, 99, 03, and other USGS world Geoids, precision (was tested to 16 significant digits).
- A new Geoid toggle command was added to the GPS OPT menu. The existing Geoid departure command is now hidden if Use Geoid is on.
- Javad Set Radio Channel, Port, and Sensitivity commands are now available in the GPS command group.
- Static GPS Logging for SMI Flex System (NavCom RT and SF units) available in the GPS command group and Next in the GPS menu (LOG).

- Javad GPS Sky View support.
- The SMI Flex Sky View has been enhanced to show the active WAAS satellite location, all satellites in sky, those in view, those being used for the current solution, a correct elevation (in your working units), and other helpful GPS information. Note: The SMI Flex GPS system automatically disables unhealthy GPS satellites.
- The Horizontal Error for the SMI Flex GPS system is now correctly calculated when in RTK Quality 5.
- SMI Flex GPS RTCM and CMR support for both base and rover.
- New Instrument Functions for SMI Flex GPS (Reset Receiver, Reset Ports, Network ID, Radio On, Radio Off, GGA On, GGA Off).
- 300 new Favorites and Function Key commands and macros (all HP commands needed by a surveyor/engineer are now supported, plus many more).
- Multiple Rover set has been simplified by the use a new macro (GPS Command Group).
- Direct driver support for StarFire's QuickStart Feature (autonomous 1 cm support). Accuracy will drift out to a maximum of 4" over about an hour.
- Numerous fixes and improvements for SMI Flex GPS support.
- Total Station Scale factor now correctly calculated by GPS Base command (tested to 16 significant digits).
- SMI Flex GPS now has GPS under tree capability (5 L1 signals must still be present).
- SMI Flex GPS can now run for 20 minutes with complete loss of RTK corrections while still maintaining 2.5 cm or better accuracies (requires StarFire RTK units).
- SMI Flex GPS automatically adjusts the satellite masking angle to obtain maximum accuracy and usability. A simplified/general overview of how it work is: Standard RTK 7d, long range RTK varies from 7d up to 15d, RTG (Backup of RTK and standard RTG) 5d.
- SMI Flex GPS now supports 115,200 baud instrument communications. Use StarUtil.exe Ports to configure the control port (com 2) to 115200 and use the Force Baud Rate setting in Classic SMI Settings (File Menu).
- A toggle was added to Classic SMI Settings (File Menu) to allow the SMI Flex GPS user control whether RTG Backup of RTK is considered Quality 5. Note: The HERR is now reported correctly, so this value may be a better control to use for actual positional accuracy determination. Some very complicated and accurate calculations are now used to determine the current working Horizontal Error.
- SMI Flex GPS can now navigate (calculate positions) at 25 Hz (25 Positions per second). Rates faster than 5 Hz require an upgrade code from Eagle Point for 10 Hz or 25 Hz, these higher rates are useful in very dynamic environments (i.e., airplanes and vehicles). Set the navigation rate that you want to use using the StarUtil.exe > Rover command.
- SMI Flex GPS now supports the Pacific Crest 35 Watt base and PDL rover system for increased range (requires an Allegro CX and 38,400 baud setting). These Pacific Crest PDL radios are also compatible with Topcon and Trimble's PCC radios and Trimble's TRIMMARK Radios when the SMI Flex GPS system is configured for RTCM or CMR.
- SMI Flex GPS now supports the use of 6 db Gain antennas with use of the new SSR Repeater radios for up to 2+ miles unlicensed range.
- SMI Flex GPS now supports the Raven CDMA cell modems for RTK Communications (default baud is 115,200). These cell modems can also be used in the field for remote synchronization and internet connection on the Allegro CE and CX devices.
- New windows interface for all but the internal classic screen.

- Function key mappings are now touch active (Allegro and Titan interfaces)
- On-screen buttons (i.e., NeXT, Graphical Stakeout, Favorites, Soft keys 1-6, etc.) have larger intelligent touch areas. For example, you can miss the soft key by a half an inch above and it will still work; you can miss favorites by an inch to the left and it will still work.
- Support for color screens (numerous areas are now color-coordinated (shift key indicators are now Red and Brown, the F6-F10 function key mappings are blue to coordinate with the required blue shift key on the Allegro CE and CX, and Graphical Stakeout and Satellite View make full use of colors for easier identification on color screens).
- A new Note Sequencing program (could already be done with Eagle Point's desktop Data Collection program). Allows for automatic changes to the default note.
- The COGO-only version of the SMI program is no longer available (base program is Data Collection (DC)). COGO can still be purchased in the version 7 variety.
- Added GGA on/off support for the SMI Flex GPS system for use with other NMEA-type devices (INFN Menu)
- Added the ability to run with both the internal and external radio systems to be used simultaneously (numerous advantages, lightweight rover local, use of SF units with RT units, etc.). The ability to turn off/on the internal radio at the base after it's configured is found in the INFN Menu.
- New SMI logo and icons.
- Graphical Stakeout has improved icons with transparencies.
- Windows CE release only (you can still buy version 7 cards for the 48). Version 8 will not run on the 48 platform (sorry, but you knew it was coming).
- The soft keys are now lightly numbered for quicker identification (helps in identifying function keys which are mapped to the soft keys and for support/training).
- Windows emulators have had all the field enhancements plus the ability to capture the classic screen (click in the upper left quadrant of the classic screen). The SMI logo will display indicating that the image has been sent to the Windows Clipboard.
- Windows emulators have had numerous enhancements for usability and to closer match the functionality of the field devices.
- Major improvements to the documentation: buttons are now searchable, 100's of additional commands have been documented, documentation no longer references older 48 platform keystrokes, 2 manuals only (user guide and reference manual).
- The issue of the system sometimes locking up when switching between Base and Rover after viewing the satellites has been fixed.
- GLONASS satellites now display for the Javad/Topcon GPS driver.