Athena™ GNSS Engine

Why Athena?

What improvements does Athena offer over the RTK firmware I'm running now?

Compared to the Hemisphere firmware most users are currently using (Qf4), there are significant improvements in performance and reliability. These include:

What was done in Athena that made it a better RTK engine than its predecessors?

Data quality control and screening, improved handling of the atmosphere, improved handling of base station corrections, improved handling of clock models, and OS improvements accelerated through state-of-the art software development tools and processes.

Will "Athena" replace "Crescent®" and "Eclipse™"?

Crescent® and Eclipse™ are trademarks used to indicate single-frequency or multi-frequency technology and do not reflect the GNSS core engine's version.

Will Athena be available for free for S320 customers?

Yes, anyone currently using an Athena-capable product that has already been activated for Eclipse RTK can upgrade for free to Athena without any need for additional activations or payments.

When do you expect Athena to be available for VS330?

This is currently being beta-tested and will be released in the very near future.

Functionality & Products

Does Athena completely replace your previous GNSS engine?

Over the next several months, Athena will gradually incorporate additional capabilities for other processing modes than RTK, such as heading and SBAS.

What receivers can run Athena?

In general, Athena will run on multi-frequency, multi-constellation products. Specifically, Athena runs on the following products:
>Boards: P302, P303, P306, P307, P320
>Packaged Products: A325, R330, S320

Will Athena run on Vectors?

By June 19th, Athena will run on multi-frequency, multi-constellation Vector™ products. Specifically, Athena runs on the following Vector products:
>Boards: H320, H321
>Packaged Products: V320, VS330

How will the Athena Vector heading accuracy compare to the current firmware?

For the first Athena Vector release, Athena will provide RTK positioning only; the heading solution will continue to use the legacy engine.

Do I need a special antenna for Athena?

Athena requires dual-frequency, multi-constellation capable antennas to operate.

How about 3rd party rover compatibility (e.g., Hemisphere Base (RTCM3) and Topcon / Trimble Rover), especially concerning GLONASS support?

Configured as a base station, Hemisphere products output the industry-standard RTCM corrections. Any rover, Hemisphere or otherwise, capable of receiving these industry-standard corrections can successfully operate as a rover receiving corrections from a Hemisphere base station.

Do I lose OmniSTAR capability when loading Athena?

Yes, all Hemisphere GNSS's firmware versions released after November 2014 do not support OmniSTAR. However, Athena-capable products will now run Atlas™, our new GNSS global corrections service. Atlas corrections are delivered by L-Band satellites. Please go to www.HGNSS.com to view a list of products that are Atlas-capable or check out our upgrade or replacement promotions for products not Atlas-capable.

How can I know that I am experiencing scintillation?

Scintillation causes rapid changes in the ionosphere. These changes can cause significantly decreased position accuracy, lengthened time-to-fix and, in extreme cases, tracking problems.

Improvements in "smoothness" when switching / fallback to different differential mode (e.g., fallback from RTK to Float to SBAS in terms of position jumps)?

We are currently working on this functionality and plan to release it in the near future.

Will there be any indication on the unit or in Carlson SurvCE that I am using Athena?

Issuing the $JI command reports the Athena firmware version. Carlson SurvCE will also display the correct firmware version.

Firmware

How do I upgrade to Athena?

If your receiver supports Athena, you can download the appropriate firmware from our website and use the same process you're familiar with.

Where can I download the Athena firmware?

Go to the Software page on the Hemisphere GNSS website (www.HGNSS.com) and download the applicable firmware. We will soon also begin listing applicable firmware on our website's Product pages.

How do I load Athena firmware onto my receiver?

Athena is loaded using the same process as our previous firmware versions.

Do I need Athena RTK firmware on my Hemisphere base receiver too?

No, Hemisphere has chosen to support as many RTK base stations as possible, when using protocols such as RTCM v3 and HGNSS's proprietary ROX.

Subscriptions & Configuration

What subscriptions do I need to use Athena?

The same subscription used for our previous GNSS engine works with our new Athena GNSS engine. As a result, if your unit is already subscribed to Eclipse RTK, it will continue to work with Athena once you have upgraded to the Athena firmware.

You said earlier that Athena will run on dual-frequency, multi-constellation receivers. What if I have a dual-frequency, multi-constellation receiver but have not purchased the L2 or GLONASS options?

Even if you have not previously upgraded to L2 and GLONASS capability, Athena automatically enables dual-frequency and multi-constellation capability. However, when RTK is not available, your unit will revert to the "purchased performance".

I am already using RTK; is there anything I have to configure differently to run Athena RTK?

No. In fact, even if your unit was not configured or upgraded to support dual-frequency and multi-constellation signals, you will experience improved RTK performance without requiring any configuration changes.

Performance

What is the accuracy I should expect with Athena?

Because RTK performance also depends on hardware performance, the exact Athena RTK accuracy is listed in each product's specifications.

Is there a limit to the baseline length with Athena RTK? What accuracy should I expect if my base is 100km away?

We do not specify a maximum baseline length. Due to the variability in the atmosphere, RTK performance over very long baselines (>50km) is dependent on the specific locations and applications. We encourage you to perform your own tests in your real-life situation to establish realistic specifications.

Can Athena be used in offshore environments?

Yes, Athena has no regional restrictions.

In the event of a GSM outage how long will Athena predict the fixed solution for?

Athena monitors the quality of the data and dynamically determines the length of time it is appropriate to report a fixed-RTK solution while not significantly impacting the quality of the positions. This is typically more than a few seconds. There is no fixed timeout.

Constellations & Correction Sources

Can Athena use the Chinese Compass BeiDou satellites?
Yes, Athena supports BeiDou B1 and B2 signals.

Does Athena use GLONASS in the initialization (float-to-fixed) process?
Yes, Athena currently uses GPS, GLONASS and BeiDou in the initialization process, provided they are supported by the receiver and antenna.

Does adding GLONASS satellites make a difference to Athena RTK performance?
Yes, adding constellations improves performance. Athena is designed to use every constellation supported by your combination of hardware and firmware.

Does Athena use SBAS satellites in its RTK calculations?
No, Athena has very strict quality control algorithms; the nature of the SBAS signals does not allow them to be verified and accepted in the GNSS engine.

Can I use Athena on VRS networks?
Yes, Athena supports the RTCM protocol typically used by VRS networks.

Is it better for Athena to connect to a VRS mount point or directly to the nearest base station?
Athena can process both single base station and VRS data. If the network RTK software is properly calculating the VRS corrections, it is always better to connect via VRS.

Can I use Athena RTK with different brands of RTK bases?
Hemisphere has chosen to support as many RTK base station brands as possible when using RTCM V3.1 and later.

Are GPS L2C, GPS L5, and Galileo supported?
No, these are not supported at this time.