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GeoExplorer 2008 Series GeoXH Handheld: FAQs for Customers

This document provides information that is common to all models of handheld in the Trimble®
GeoExplorer® 2008 series, followed by information that is specific to the GeoXH™ handheld.

GeoExplorer 2008 series questions

What is the GeoExplorer 2008 series?

The GeoExplorer 2008 series is a range of GPS handhelds from Trimble that are powered by the
Windows Mobile® version 6 operating system. These handhelds integrate the power of Windows Mobile
software with a high-performance Trimble GPS receiver, Bluetooth® and wireless LAN technology, and
a SD/SDHC storage card slot—all in a rugged, portable handheld.

The GeoExplorer 2008 series comprises:

- The GeoXH handheld, which uses H-Star™ technology to provide subfoot (<30 cm) accuracy in
  real time or after postprocessing, and decimeter (10 cm/4 in) accuracy with an optional Zephyr™
  antenna in real time or after postprocessing.

- The GeoXT™ handheld, providing submeter real-time or postprocessed accuracy.

- The GeoXM™ handheld, providing 1–3 meter real-time or postprocessed accuracy.

The GeoExplorer 2008 series represents a breakthrough in GPS handheld technology—providing GIS
professionals and mobile GIS users with the ultimate platform for all applications.

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What are the key features of the GeoExplorer 2008 series?

Each model in the GeoExplorer 2008 series offers a different level of accuracy. However, all models offer:

- *Real-time capability*: With integrated SBAS support as well as the ability to connect to a wide variety of real-time correction sources, you can get the accuracy you need, when you need it.

- *High-resolution VGA display*: Provides crisp and clear viewing of your data.

- *Bluetooth and wireless LAN connectivity options*: Use the built-in wireless LAN connection to access your organization's secure network and get the most up-to-date information. Use the built-in Bluetooth wireless technology, to connect the handheld to a Bluetooth-enabled cellular phone for access to the Internet and receive real-time corrections from a VRS™ network and background map data. You can also wirelessly connect to other devices such as Bluetooth-enabled laser rangefinders and barcode scanners for convenient cable-free solutions that keep you productive in the field.

- *1 GB onboard storage plus SD slot for removable cards*: Enables you to take all the background data you need into the field.

- *Windows Mobile version 6 operating system*: The Windows Mobile 6 operating system includes familiar Microsoft® software, giving you all the tools you need for a seamless exchange of data between the field and the office.

- *Ruggedness*: The receiver is rugged and resistant to heavy wind-driven rain, and comes with an all-day battery, so it can work as hard as you do, wherever you work.

What software is available for my field requirements?

A range of software is available for the GeoExplorer 2008 series including:

- Trimble TerraSync™ software version 3.21 or later

- ESRI ArcPad version 7.1.0 or later with the Trimble GPScorrect™ extension for ESRI ArcGIS version 2.41 or later

- Custom software developed with the Trimble GPS Pathfinder® Tools Software Development Kit (SDK) version 2.31 or later

- GPS data collection applications using the industry-standard NMEA protocol, designed for the Windows Mobile 6 operating system.

Note: Real-time subfoot capability is only available if you are using the TerraSync software, the GPScorrect extension, or an application based on the GPS Pathfinder Tools SDK.

What are the features and benefits of the Windows Mobile 6 operating system?

Windows Mobile is Microsoft's premier operating system for mobile devices. With a familiar Microsoft user interface, it provides a wide range of standard software applications that work seamlessly with your desktop operating system. The Windows Mobile operating system supports a host of communication options so you can be mobile and still have access to your enterprise data, email, and the Internet. The GeoExplorer 2008 series runs the Windows Mobile 6 operating system, allowing you to choose from the most comprehensive range of software available to meet your field requirements. In addition, the operating system features new security enhancements, for more robust use when connected to a network, and persistent storage so your data is protected from unexpected power loss.

What software is standard with the GeoExplorer 2008 series?

- GPS Controller and GPS Connector software for full GPS control, comprehensive status information, and in-field mission planning.

- Microsoft Outlook® Mobile applications including Today, Messaging, Calendar, Contacts, Tasks, and Notes.

- Microsoft ActiveSync® software and Microsoft Windows Mobile Device Center for connecting the handheld to computers running the Windows Vista®, Windows® XP, or Windows 2000 operating system, and for synchronization of files with Outlook Mobile applications.

- Microsoft standard productivity tools for mobile applications including Word Mobile, Excel Mobile, PowerPoint Mobile, Internet Explorer, and calculator for day-to-day tasks.

- Bluetooth settings for configuring and controlling Bluetooth wireless connections.

- Windows Media® player to allow playback of sound and video files.

Can I change the language used by the Windows Mobile 6 operating system?

The first time you turn on your handheld, you must select the language used by the Windows Mobile 6 operating system. You can only select the language once.

To change the language used on the handheld after you have already used the handheld for the first time, you must return the handheld to your Trimble service provider.

The following languages are supported by the GeoExplorer 2008 series handheld: English, French, German, Japanese, Korean, Italian, Portuguese (Brazilian), Spanish. A separate version is also available with Chinese (Simplified) and Russian.

What storage cards do the GeoExplorer 2008 series handhelds support?

The GeoExplorer 2008 series handhelds support both SD and SDHC (high capacity SD) storage cards which are available in various capacities.

How are the GeoExplorer 2008 series handhelds powered?

GeoExplorer 2008 series handhelds are powered by an internal rechargeable Lithium-ion battery. When fully charged, the internal battery of the handheld provides enough power for a full working day. Use the support module and AC adaptor provided to recharge the internal battery. To extend the time between charges, Trimble offers an optional external power kit and a vehicle power adaptor.

What can I use the GeoExplorer 2008 series handheld's wireless LAN capabilities for?

The GeoExplorer 2008 series handheld has an integrated wireless Local Area Network (LAN) radio compliant with IEEE 802.11 b/g that you can use to receive data anywhere within the range of a wireless LAN access point. Wireless LAN is often referred to as Wi-Fi. A wireless LAN connection can be used to connect to the Internet (at broadband speeds) via an 802.11b or 802.11g wireless LAN access point. 802.11b has a maximum speed of 11 Mbps, and 802.11g has a maximum speed of 54 Mbps. Security options such as 802.1x, WEP, and WPA are supported.

There are many publicly available wireless LAN access points (also known as "hotspots"). To locate nearby access points, use Internet sites such as www.jiwire.com.

Using the wireless LAN radio in a GeoExplorer 2008 series handheld has no impact on GPS performance, but note that battery power is consumed faster when there is an active connection to a wireless LAN access point.

What can I use the GeoExplorer 2008 series handheld's Bluetooth capabilities for?

The GeoExplorer 2008 series handheld has an integrated Bluetooth radio that you can use to establish cable-free connections to other Bluetooth devices within a range of 10 meters.

Using a Bluetooth wireless connection, you can communicate with Bluetooth-enabled devices such as a cellular phone, desktop computer, GeoBeacon™ receiver, laser rangefinder, or barcode scanner. You can also communicate with peripheral devices that use Bluetooth adaptors instead of serial or USB connections.

Using the Bluetooth radio in a GeoExplorer 2008 series handheld has no impact on GPS performance, but note that battery power is consumed faster when there is an active connection to another Bluetooth-enabled device.

Does the GeoExplorer 2008 series support Internet access using a Bluetooth DUN or PAN connection to a Bluetooth-enabled phone?

Yes, you can access the Internet by creating a Bluetooth DUN or PAN connection to a Bluetooth enabled cell phone. For more information, refer to the *GeoExplorer 2008 Series User Guide* or the support notes available from the Support Downloads page for the GeoXH, GeoXT, or GeoXM handheld at www.trimble.com/support.shtml.

Can I deactivate the Bluetooth and wireless LAN radios in the GeoExplorer 2008 series handhelds?

To ensure simple out-of-the-box operation, both the Bluetooth and wireless LAN radios are activated by default in GeoExplorer 2008 series handhelds when they are shipped from Trimble.

The Bluetooth radio is off by default, but can be turned on by configuring it in the Bluetooth settings application.

The wireless LAN radio is on by default and is ready to use, but can be turned off when not in use.

If you must deactivate the Bluetooth or wireless LAN radios so that they can not be turned on, run the Radio Activation Manager. You can download this software from the Support Downloads page for the

GeoXH, GeoXT, or GeoXM handheld at www.trimble.com/support.shtml. You can also use the Radio Activation Manager software to reactivate the radios later if you wish.

Does the GeoExplorer 2008 series support cabled Ethernet connections?

No, the GeoExplorer 2008 series handheld does not support cabled Ethernet connections. Use the integrated wireless LAN radio to transfer data at Ethernet speeds.

What trade-in programs are available for the GeoExplorer 2008 series?

Trimble offers a range of trade-in options on new GeoExplorer 2008 series handhelds. For further information, please contact your Trimble reseller.

Where can I get more information?

For further information, go to www.trimble.com/geoxh.shtml or contact your Trimble reseller.

GeoXH handheld questions

What is H-Star technology?

H-Star technology is a patented Trimble technology that uses a combination of GPS code and carrier data to compute positions in the decimeter to subfoot (10–<30 cm/4–<12 in) range.

What is new about H-Star technology with the GeoExplorer 2008 series GeoXH handheld?

The GeoExplorer 2008 series GeoXH handheld extends the availability of H-Star technology into the field, providing subfoot accuracy in real time, and extends the accuracy of H-Star technology to decimeter level in real time or after postprocessing when using an optional Zephyr antenna and when appropriate base station infrastructure is available.

What applications will benefit from subfoot and decimeter accuracy in real time?

Anyone requiring the highest levels of accuracy for their GIS database will benefit from achieving subfoot and decimeter accuracy in real time (in the field).

With real-time subfoot accuracy you can be confident that you have logged data to the required accuracy, and you don't need to rely on the availability of base station data for postprocessing. This is particularly beneficial for contractors and in circumstances where any processing issue can't be corrected later (for example, when mapping a site just before the bulldozers come in to clear it).

But the greatest benefits of real-time subfoot accuracy are realized when relocating previously-mapped assets, particularly those which are buried or hidden. Cables and pipes can be excavated without wasted effort or risk of damage to nearby assets.

Applications that will benefit from subfoot and decimeter accuracy in real time are:

- High-accuracy GIS data collection and "as-built" mapping
- Relocating buried and hidden assets
- Electric and gas utilities

- Water and wastewater services
- Land reform projects
- Other applications where on-the-spot positioning is crucial

What real-time correction options provide decimeter to subfoot accuracy?

To obtain decimeter to subfoot accuracy in real time with a GeoXH handheld, you can connect to the Internet using a Bluetooth-enabled cellular phone to access corrections from a dual-frequency VRS network or base station. Alternatively you can receive real-time corrections from a dual-frequency base station via an external radio.

The GeoXH handheld supports real-time correction messages in the RTCM 2.x, RTCM 3.0, CMR, and CMR+ formats. All of these formats can be used to achieve decimeter to subfoot accuracy with real-time H-Star technology, provided the broadcast contains dual-frequency carrier corrections.

What level of real-time horizontal accuracy can I expect with the GeoXH handheld?

The GeoXH handheld provides a range of horizontal accuracy in real time, depending on the type of antenna and the real-time correction source used:

Antenna type	Real-time correction source	Horizontal accuracy	Notes
Internal antenna	VRS network, accessed using a cellular connection to the Internet.	Real-time H-Star technology typically provides subfoot (<30 cm) accuracy, anywhere within a VRS network.	H-Star specified accuracy is typically achieved within 2 minutes. Accuracy degrades outside the VRS network even though corrections may still be available.
	One dual-frequency base station, accessed using a cellular connection to the Internet or from an external radio.	Real-time H-Star technology typically provides subfoot (<30 cm) accuracy up to 80 km (50 miles) from the base station.	H-Star specified accuracy is typically achieved within 2 minutes. Submeter accuracy (+1 ppm) beyond 80 km (50 miles) of the base station.
Optional Zephyr antenna	VRS network, accessed using a cellular connection to the Internet.	Real-time H-Star technology typically provides 10 cm (4 in) accuracy, anywhere within a VRS network.	H-Star specified accuracy is typically achieved within 2 minutes. Accuracy degrades outside the VRS network even though corrections may still be available.
	One dual-frequency base station, accessed using a cellular connection to the Internet or from an external radio.	Real-time H-Star technology typically provides: - 10 cm (4 in) accuracy up to 30 km (18 miles) from the base station	H-Star specified accuracy is typically achieved within 2 minutes. Submeter accuracy (+1 ppm) beyond 80 km

		• Subfoot accuracy 30–80 km (18–50 miles) from the base station	(50 miles) of the base station.
Internal antenna or optional Zephyr antenna	SBAS	Submeter within the coverage area	Coverage depends on the specific SBAS service.
	Marine beacon	Submeter within 200 km (120 miles) of an MSK marine beacon	Requires purchase of a Trimble GeoBeacon receiver.
	L1 base station	Generally submeter	Depends on the antenna, base station, the range, and connection latency.

What level of horizontal accuracy can I expect after postprocessing data collected with the GeoXH handheld?

The GeoXH handheld provides a range of horizontal accuracy after postprocessing, depending on the type of antenna used during data collection and the type of postprocessing used:

Antenna type	Postprocessing type	Horizontal accuracy	Notes
Internal antenna	H-Star processing	H-Star processing provides subfoot (<30 cm) accuracy up to 80 km (50 miles) from one base station, or within 200 km (120 miles) of three base stations.	H-Star specified accuracy is typically achieved within 2 minutes.
	Code processing	Submeter accuracy +1 ppm beyond 80 km (50 miles) of the base station.	
Optional Zephyr antenna	H-Star processing	H-Star processing provides: • 10 cm (4 in) accuracy up to 30 km (18 miles) from the base station. • 20 cm (8 in) accuracy at 30–80 km (18–50 miles) from the base station, or within 200 km (120 miles) of three base stations.	H-Star specified accuracy is typically achieved within 2 minutes.
	Code processing	Submeter accuracy +1 ppm beyond 80 km (50 miles) of the base station.	

What level of real-time vertical accuracy can I expect from the GeoXH handheld?

The GeoXH handheld provides a range of vertical accuracy in real time, depending on the real-time differential correction source used:

Antenna type	Real-time correction source	Vertical accuracy	Notes
Internal antenna	VRS network, accessed using a cellular connection to the Internet	Real-time H-Star technology typically provides 45 cm (18 in) accuracy, anywhere within a VRS network	H-Star specified accuracy is typically achieved within 2 minutes. Accuracy degrades outside the VRS network even though corrections may still be available.
	One dual-frequency base station, accessed using a cellular connection to the Internet or from an external radio	Real-time H-Star technology typically provides 45 cm (18 in) accuracy up to 80 km (50 miles) from the base station.	H-Star specified accuracy is typically achieved within 2 minutes. Submeter accuracy (+2 ppm) beyond 80 km (50 miles) of the base station.
Optional Zephyr antenna	VRS network, accessed using a cellular connection to the Internet	Real-time H-Star technology typically provides 10 cm (4 in) accuracy, anywhere within a VRS network	H-Star specified accuracy is typically achieved within 2 minutes. Accuracy degrades outside the VRS network even though corrections may still be available
	One dual-frequency base station, accessed using a cellular connection to the Internet or from an external radio	Real-time H-Star technology typically provides: • 10 cm (4 in) accuracy up to 30 km (18 miles) from the base station • 45 cm (18 in) accuracy 30–80 km (18–50 miles) from the base station	H-Star specified accuracy is typically achieved within 2 minutes. Submeter accuracy (+2 ppm) beyond 80 km of the base station.
Internal antenna or optional Zephyr antenna	SBAS	<2 m (6 ft) within the coverage area	Coverage depends on the specific SBAS service.
	Marine beacon	<2 m (6 ft) within 200 km (120 miles) of an MSK marine beacon	Requires purchase of a Trimble GeoBeacon receiver.
	L1 base station	Generally <2 m (6 ft)	Depends on the antenna, base station, the range, and connection latency.

What level of vertical accuracy can I expect after postprocessing data collected with the GeoXH handheld?

The GeoXH handheld provides a range of vertical accuracy after postprocessing, depending on the type of antenna used during data collection and the type of postprocessing used:

Antenna type	Postprocessing type	Vertical accuracy	Notes
Internal antenna	H-Star processing	H-Star processing provides 45 cm (18 in) accuracy up to 80 km (50 miles) from one base station, or within 200 km (120 miles) of three base stations.	H-Star specified accuracy is typically achieved within 2 minutes.
	Code processing	<2 m (6 ft) accuracy +2 ppm beyond 80 km (50 miles) of the base station.	
Optional Zephyr antenna	H-Star processing	H-Star processing provides: • 10 cm (4 in) accuracy up to 30 km (18 miles) from the base station. • 30 cm (12 in) accuracy at 30–80 km (18–50 miles) from the base station, or within 200 km (120 miles) of three base stations.	H-Star specified accuracy is typically achieved within 2 minutes.
	Code processing	<2 m (6 ft) accuracy +2 ppm beyond 80 km (50 miles) of the base station.	

How can I make sure I get the best possible accuracy when using real-time H-Star technology?

The GeoXH handheld is designed to be used with the internal antenna (under the Trimble logo) horizontal and with a clear view of the sky.

If you are using the Trimble TerraSync software to collect data, use accuracy-based logging to ensure the features collected meet your accuracy requirements. To obtain the most accurate results in real time, connect to a dual-frequency VRS network and apply the differential corrections to your data.

If you are not using the Trimble TerraSync software, Trimble recommends that you observe the accuracy indicator until the desired accuracy level is reached (H-Star accuracy is typically achieved within 2 minutes). You should then log GPS data for at least a few seconds, when collecting point features or vertices. Collecting multiple positions for a static feature helps to improve accuracy by averaging out the errors in individual GPS positions. In heavy canopy, or other difficult environments, Trimble recommends logging for 1 to 2 minutes.

When should I use the optional Zephyr antenna?

Trimble recommends using the optional Zephyr antenna if you need to obtain the best possible accuracy with the GeoXH handheld. The Zephyr antenna improves accuracy as it is a high performance antenna with a larger ground plane, it is raised above the operator's body, and it is used on a pole to precisely position the antenna both horizontally and vertically over the feature. The GeoXH with a Zephyr antenna provides decimeter (10 cm/4 in) accuracy in real time or after postprocessing when the base infrastructure requirements and GPS receiver settings are met.

The GeoXH handheld's internal antenna is specified to provide subfoot (<30 cm) accuracy, but in ideal conditions it may also provide decimeter accuracy in real time or after postprocessing. The Zephyr antenna makes it possible to obtain decimeter accuracy in more difficult environments and to accurately position the antenna above the feature being mapped.

What other external antennas are available for the GeoXH handhelds?

The Hurricane and External Patch antennas are not recommended for use with the GeoXH handheld. Use of these L1-only antennas would prevent the GeoXH achieving real-time subfoot accuracy. The Zephyr antenna is the only external antenna recommended for use with the GeoXH handheld.

Is it possible to get high-accuracy NMEA data?

The GeoXH handheld does not support the output of real-time H-Star corrected NMEA data to subfoot or decimeter accuracy.

If you are using real-time H-Star technology in the Trimble TerraSync software, the GPScorrect extension, or an application based on the GPS Pathfinder Tools SDK, you can still enable NMEA data output from the GeoXH handheld; however, the GPS positions in the NMEA data stream are corrected in real time using code data only. They will have submeter accuracy, and are not corrected to subfoot or decimeter levels of accuracy.

Can I use a GeoXH handheld as a base station?

The GeoXH handheld can be used with the TerraSync software to log a file with L1/L2 data as a temporary base station solution. The GeoXH handheld is not supported as a base receiver in the TRS™ (Trimble Reference Station) software, GPSBase software, or other Trimble base station software.