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## GPS Pathfinder ProXRT Receiver: Customer FAQs

### What is the GPS Pathfinder ProXRT receiver?

The Trimble® GPS Pathfinder® ProXRT receiver is a high-precision GNSS receiver, ideal for GIS data collection and maintenance applications that require high accuracy in real time (that is, in the field). When combined with a suitable field computer and compatible software, the ProXRT receiver provides the ultimate in high-accuracy GIS positioning.

### What are the main benefits of using the ProXRT receiver?

- *High accuracy:* The ProXRT receiver is the first receiver designed specifically for GIS data collection that offers real-time decimeter and subfoot accuracy.
- *Flexibility:* The receiver offers a wide range of real-time capabilities, together with the option of GLONASS support and the ability to mount the system on a pole, in a backpack or on a vehicle.
- *Worldwide real-time capability:* The receiver's integrated OmniSTAR capability allows for real-time accuracy at the decimeter/subfoot/submeter level practically anywhere on earth.
- *Ruggedness:* The receiver is rugged and waterproof, so it can work as hard as you do, wherever you work.

### What applications will benefit from subfoot accuracy in real time?

Anyone requiring subfoot accuracy will benefit from achieving that 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 cannot be seen from a distance, such as buried cables, or small meters and valves.

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Trimble Navigation Limited, 10355 Westmoor Drive, Suite #100, Westminster, CO 80021, USA

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## What applications will benefit from GLONASS support?

Installing the GLONASS option on your ProXRT receiver increases the number of satellites that you can potentially observe when working in the field. By tracking GPS and GLONASS satellites when sky visibility is limited, the receiver may maintain lock on enough satellites to keep positioning, letting you work for longer in tough environments.

Tracking GLONASS satellites as well as GPS satellites can also improve productivity by reducing the time required to achieve real-time decimeter or subfoot accuracy.

**Note:** *The ProXRT receiver supports the use of GLONASS satellites for the calculation of positions in the field (either autonomous or real-time corrected). However, GLONASS pseudorange and carrier measurements from the ProXRT receiver are not logged and cannot be postprocessed.*

## 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/subfoot (10 cm to 30 cm) range. For information on how H-Star technology works, and how to get the best performance from receivers that have H-Star technology, refer to the white paper *H-Star Technology Explained*, available at [www.trimble.com](http://www.trimble.com).

## What is new about H-Star technology with the ProXRT receiver?

Prior to the introduction of the ProXRT receiver in March 2008, Trimble receivers equipped with H-Star technology offered subfoot accuracy only after postprocessing. The ProXRT receiver extends the availability of H-Star technology into the field in real time, and extends the accuracy of H-Star technology to decimeter level, provided appropriate GNSS infrastructure is available.

## What is GNSS?

GNSS (Global Navigation Satellite System) is the collective term used to describe satellite-based positioning systems that offer global coverage. At present there are two available GNSS systems: the US Global Positioning System (GPS) and the Russian GLONASS system. Planned future GNSS systems include the European Union's Galileo system and the Chinese COMPASS system.

A **GNSS receiver** is a device that can compute its position based on signals received from one or more GNSS systems. The ProXRT receiver always uses signals from GPS and, when the GLONASS option is installed, also from GLONASS.

For more information, refer to the *Global Navigation Satellite System (GNSS) FAQs for Mapping and GIS*, available at [www.trimble.com](http://www.trimble.com).

## What is GLONASS?

GLONASS is the Russian **G**LObal **N**avigation **S**atellite **S**ystem, originally developed by the Soviet Union and now managed for the Russian Government by the Russian Space Forces.

At the time of writing, the GLONASS constellation remains incomplete, with between 3 and 4 satellites typically above the horizon at any moment in time. Until such time as the constellation is complete, GLONASS will remain a viable GNSS only when combined with GPS.

## What level of real-time horizontal accuracy can I expect with the ProXRT receiver?

The ProXRT receiver provides a range of horizontal accuracy in real time, depending on the real-time differential correction source used:

Real-time correction source	Horizontal accuracy	Notes
VRS™ network, accessed using a cellular connection to the Internet	Real-time H-Star technology typically provides 10 cm accuracy, anywhere within a VRS network	Accuracy degrades outside the VRS network even though corrections may still be available
Single dual-frequency base station, accessed using a cellular connection to the Internet	Real-time H-Star technology provides: <ul style="list-style-type: none"> <li>• 10 cm accuracy up to 30 km from the base station</li> <li>• Subfoot accuracy 30 km to 80 km from the base station</li> <li>• Submeter accuracy (+1ppm) beyond 80 km of the base station</li> </ul>	H-Star specified accuracy is typically achieved within 2 minutes
OmniSTAR HP service	10 cm accuracy, after initialization time of 20 to 40 minutes	Subscription required; for pricing and coverage information, contact OmniSTAR ( <a href="http://www.omnistar.com">www.omnistar.com</a> )
OmniSTAR XP service	20 cm accuracy, after initialization time of 20 to 40 minutes	
OmniSTAR VBS service	Submeter accuracy, with no initialization delay	
SBAS	Submeter within the coverage area	Coverage depends on the specific SBAS service.
Marine beacon	Submeter within 200 km of an MSK marine beacon	Requires purchase of a Trimble GeoBeacon™ receiver.
Other external radio or cellular connection to a base station	Depends on the base station, the range, and connection latency	

## What level of horizontal accuracy can I expect after postprocessing?

The ProXRT receiver provides a range of horizontal accuracies after postprocessing, depending on the type of postprocessing used:

Postprocessing type	Horizontal accuracy
H-Star processing	H-Star processing provides: <ul style="list-style-type: none"> <li>• 10 cm accuracy up to 30 km from one or more base stations</li> <li>• 20 cm accuracy at 30–80 km distance from one base station, or within 200 km of three base stations</li> </ul>

	H-Star specified accuracy is typically achieved within 2 minutes
Code processing	Submeter accuracy

### What level of vertical accuracy can I expect from the ProXRT receiver?

The ProXRT receiver provides a range of vertical accuracy, depending on the real-time differential correction source or the type of postprocessing used:

Real-time correction source	Vertical accuracy	Notes
VRS™ network, accessed using a cellular connection to the Internet	Real-time H-Star technology typically provides 10 cm accuracy, anywhere within a VRS network	Accuracy degrades outside the VRS network even though corrections may still be available
Single dual-frequency base station, accessed using a cellular connection to the Internet	Real-time H-Star technology provides: <ul style="list-style-type: none"> <li>• 10 cm accuracy up to 30 km from the base station</li> <li>• 45 cm accuracy 30 km to 80 km from the base station</li> <li>• Submeter accuracy (+2ppm) beyond 80 km of the base station</li> </ul>	H-Star specified accuracy is typically achieved within 2 minutes
OmniSTAR HP service	15 cm accuracy, after initialization time of 20 to 40 minutes	Subscription required; for pricing and coverage information, contact OmniSTAR ( <a href="http://www.omnistar.com">www.omnistar.com</a> )
OmniSTAR XP service	30 cm accuracy, after initialization time of 20 to 40 minutes	
OmniSTAR VBS service	Better than 5 m, with no initialization delay	
SBAS	Better than 5 m, within the coverage area	Coverage depends on the specific SBAS service.

Postprocessing type	Vertical accuracy
H-Star processing	With a single base station, H-Star processing provides: <ul style="list-style-type: none"> <li>• 10 cm accuracy up to 30 km from the base station</li> <li>• 30 cm accuracy at 30-80 km distance from one base station, or within 200 km of three base stations</li> </ul> <p>H-Star specified accuracy is typically achieved within 2 minutes</p>
Code processing	Submeter accuracy

## Which real-time correction options provide the highest accuracy?

Only the real-time H-Star technology and OmniSTAR XP or HP service options reliably deliver accuracy better than submeter. H-Star technology relies on local GNSS infrastructure to achieve accuracy in the decimeter to subfoot range, while OmniSTAR XP and HP services deliver this level of accuracy in remote areas where local infrastructure is unavailable.

**Note:** *OmniSTAR XP and HP services typically require 20-40 minutes' initialization time (and up to a maximum of 60 minutes) which may make these services impractical in environments with many obstacles (for example, trees and buildings) that can obstruct OmniSTAR signals.*

## What real-time correction options are available in my area?

Contact your Trimble reseller to talk about the options available in your area. In some parts of the world, there may be very few options; in other areas there may be numerous ways to achieve high accuracy in real time, and you'll want to discuss the economic and workflow differences between each of these options.

## How does the ProXRT receiver support GLONASS?

The ProXRT receiver has a dual-constellation RF signal processor and can decode and process signals from both GPS and GLONASS. The ProXRT receiver has 72 channels, each capable of tracking one of two frequency ranges for the GPS and/or GLONASS systems.

## What field computers work with the ProXRT receiver?

The ProXRT receiver can work with any field computer that can connect to the receiver using a serial cable (RS232) or Bluetooth® wireless technology. In particular, the ProXRT receiver has been intensively tested with the following Trimble rugged field computers:

- Trimble Nomad™ series handhelds
- Trimble Recon® handheld
- Trimble Ranger™ handheld

## What software is available for use with the ProXRT receiver?

The ProXRT receiver is supported by the following field software applications:

- Trimble TerraSync™ software (Standard and Professional editions), version 3.20 or later
- Trimble GPScorrect™ extension for ESRI ArcPad software, version 2.40 or later
- Applications created using the Trimble GPS Pathfinder Tools SDK, version 2.30 or later

**Note:** *The ProXRT receiver does not output data using the NMEA protocol, and cannot be used with NMEA-based software.*

Data collected using the ProXRT receiver and one of the field software applications listed above can be downloaded and processed by the following office software applications:

- Trimble GPS Pathfinder Office software, version 4.10 or later
- Trimble GPS Analyst™ extension for ESRI ArcGIS software, version 2.10 or later (with updates installed)

### What do I get in the box?

Purchasers of the ProXRT Receiver (P/N 85350-00 or 85360-10) receive the following items:



### What mounting options should I purchase?

In addition to the items you receive with the ProXRT, you may need to purchase some of the following:

- To achieve decimeter or subfoot level accuracy, Trimble recommends that you purchase the Pole Field Kit (P/N 85355-00). In addition, don't forget to purchase the appropriate pole-mount for your handheld (P/N 58913 for the Trimble Ranger handheld, P/N EGL-Z2009 for the Trimble Nomad series handhelds, P/N REC-TPOLEBRK for the Trimble Recon handheld).
- To use the receiver in a backpack (similar to using the Pro XRS receiver), purchase the Backpack Field Kit (P/N 85356-00).
- To use the ProXRT receiver on a vehicle, purchase the following vehicle mounting accessories: magnetic mount (P/N 56008-00) and quick-release adapter (P/Ns 19487 & 19493).

### **What ProXRT receiver options are available?**

You can purchase the ProXRT receiver with GLONASS pre-installed using (P/N 85360-10) or you can purchase the ProXRT without GLONASS (using P/N 85350-00) and subsequently upgrade the receiver to GLONASS capability using P/N 85360-10-UPG. The GLONASS option is discounted when purchased at the same time as the receiver. For pricing information, see your Trimble reseller.

You must purchase a subscription to an OmniSTAR service before you can use an OmniSTAR service with the ProXRT receiver. For details of subscription charges and coverage, contact OmniSTAR ([www.omnistar.com](http://www.omnistar.com)).

### **What trade-in programs are available for the ProXRT receiver?**

Customers wishing to purchase a ProXRT receiver who have existing GPS Pathfinder Pro XRS, ProXH™ or ProXT™ receiver can claim a preferential trade-in credit. Customers with any other submeter GPS receiver can claim a lesser trade-in credit.

For trade-in pricing details, contact your Trimble reseller.

### **Can I deactivate the Bluetooth radio?**

The internal Bluetooth radio is always on and discoverable. There is no user control to disable the Bluetooth radio.

### **Can I use the ProXRT receiver as a reference station?**

The ProXRT receiver is configured as a roving receiver and does not support operation as a real-time or postprocessing reference station. For customers who require their own local base station, Trimble recommends the NetR5 reference station, available from Trimble infrastructure resellers.

### **Where can I get more information?**

For further information, go to the Trimble website ([www.trimble.com](http://www.trimble.com)) or contact your local Trimble reseller.