

GPS Pathfinder Receiver Systems

Frequently Asked Questions and Answers

What are the GPS Pathfinder receiver systems?

The GPS Pathfinder® receiver systems are advanced GPS systems for mapping and GIS applications. They consist of GPS receivers and include field and office software and a choice of data collector and real-time differential correction options. There are three GPS Pathfinder receivers to choose from:

- GPS Pathfinder Pro XR – combined GPS/Beacon receiver and antenna
- GPS Pathfinder Pro XRS – combined GPS/Beacon/Satellite Differential receiver and antenna
- GPS Pathfinder Power – combined GPS/Satellite Differential receiver and antenna in a single housing.

What do the standard systems include?

All three GPS Pathfinder systems include the receiver, antenna, ergonomic backpack, all cables necessary to operate the system, camcorder batteries, Trimble support module to recharge the batteries, hard travel case, GPS Pathfinder Office software, and a choice of data collection systems:

- Asset Surveyor® software on a TSC1™ data collector
- TerraSync™ software on a user-supplied Windows CE device
- ASPEN® software on a user-supplied Windows laptop or pen computer.

What optional accessories are available?

The following optional accessories are available for all three systems:

- Vehicle Kit – provides the ability to use any of the GPS Pathfinder systems in vehicle applications. The kit includes a magnetic mount for the integrated antenna, quick release, 2 quick-release adaptors and an automobile power adaptor to power the system.
- GPS Pathfinder System Centimeter Processing Option – enables GPS accuracies of 1cm + 5ppm using carrier phase data collection techniques with a 45-minute occupation time and a range of less than 10km from the base station.

Trimble

How accurate are the GPS Pathfinder systems?

With the Differential Correction utility in GPS Pathfinder Office software, the GPS Pathfinder Pro XRS and Pro XR systems can record positions accurate to 50cm + 1ppm on a second-by-second basis; the GPS Pathfinder Power system can record positions accurate to 1m + 1ppm.

Using real-time differential corrections, all three systems can record positions accurate to 1m, but this is subject to a number of operational conditions.

Without differential correction, the accuracy of a single position is about 10m.

Can a higher level of accuracy be achieved by collecting more data?

Yes. Collecting 10 minutes or more of continuous carrier phase data with your GPS Pathfinder system, and postprocessing with the GPS Pathfinder Office software can give position accuracies of 30cm. With 30 minutes of data, the accuracy improves to 10cm. With 45 minutes of data and the GPS Pathfinder System Centimeter Processing Option, the accuracy improves to the cm level.

What is the GPS Pathfinder Office software?

GPS Pathfinder Office is a software suite designed for fast and efficient processing of GPS data files collected with GPS Pathfinder mapping and GIS data collection systems. This software allows you to create data dictionaries, transfer files, differentially correct, view, edit and export your data to a GIS, spreadsheet, database or CAD system.

What is real-time differential GPS (DGPS) ?

Often called DGPS, real-time differential GPS is a technique for eliminating errors in your GPS position that is applied as the position is calculated, providing better accuracy as you collect your data or navigate in the field.

- To take advantage of DGPS accuracy in the field you need to have both a differential correction receiver and a GPS receiver. These two components are integrated into a single receiver in all GPS Pathfinder Pro XR, Pro XRS and Power receivers and comprise the 'rover' receiver.
- You also need a GPS receiver at a known location to generate corrections, and a transmitter to broadcast the corrections to the rover receiver. These two units comprise the 'base' component of the system.

Which DGPS solutions are supported by the GPS Pathfinder systems?

There are four different real-time DGPS solutions supported by the GPS Pathfinder systems.

- MSK Radio-navigation beacon transmitters – the radio-navigation beacons originated as a means for providing DGPS accuracy for maritime navigation and are typically operated by government agencies, like the U. S. Coast Guard. The GPS Pathfinder Pro XR and Pro XRS receivers contain an integrated beacon receiver.

- Geo-stationary satellites – commercial service providers such as Racal-Landstar and Omnistar use geo-stationary satellites to broadcast corrections to land and maritime users. The GPS Pathfinder Pro XRS and Power systems contain an integrated satellite differential receiver.
- WAAS geo-stationary satellites – the United States Federal Aviation Authority (FAA) has developed a satellite DGPS system called WAAS, which broadcasts DGPS corrections to aid in aircraft navigation. This real-time source can also be used for land-based applications. All three GPS Pathfinder receivers are capable of receiving WAAS DGPS corrections.
- Custom VHF, microwave and sub-carrier transmitters – differential corrections are also broadcast by a wide range of government agencies and commercial users via custom VHF and microwave transmitters and cell phones. All three GPS Pathfinder receivers can be connected to these systems to receive DGPS corrections from these sources.

Which parts of the world are covered by these DGPS solutions?

Many coastal areas and some inland waterways are covered by beacons. As the benefits of beacons for land-based applications have become increasingly recognized, networks are constantly expanding to cover greater land areas. In the United States the beacon network is being expanded with the aim of providing seamless, coast-to-coast coverage. A list of beacons is available on Trimble's website at www.trimble.com/gis/beacon

A large part of the world is covered by either of the two satellite differential providers; however the elevation of the transmitting satellite decreases the farther you are from the equator. You must have line-of-sight to the satellite to receive corrections. The provider's world wide web sites (www.racal-landstar.com and www.omnistar.com) can provide current information on satellite coverage.

WAAS is available throughout the United States (including Hawaii and southern Alaska). However, the elevation angle varies from state to state, and you must have line-of-sight to one of the two WAAS geo-stationary satellites to receive corrections. Refer to the WAAS FAQ on www.trimble.com for more details.

What does it cost to use the various DGPS solutions?

WAAS and beacon corrections are free to use. The satellite differential service providers charge a subscription fee to activate their service. Contact one of the satellite differential correction providers for pricing details.

If I do not activate the satellite differential option on my receiver, will I still have the chance to enable this service at a later date?

The GPS Pathfinder Pro XRS and Power receivers are not pre-activated. You have the choice of which service provider you wish to use and when the service is activated. When you decide to subscribe to a satellite differential correction service, a telephone call to the service provider is usually all that is required. A booklet from each service provider is included with these systems.

What field software can be used with the GPS Pathfinder systems?

The GPS Pathfinder systems can be used with a number of field software packages, including:

- Trimble's Asset Surveyor, TerraSync and ASPEN software, in conjunction with GPS Pathfinder Office software, for flexible data collection and maintenance, and sophisticated data processing. Note that the ASPEN software does not support WAAS or the GPS Pathfinder Power receiver.
- Trimble's GPS Pathfinder Tools software, to integrate GPS data and add value to existing mapping and GIS software packages.
- Trimble's GPS Pathfinder Controller software to configure GPS settings for third-party applications.
- Other software that accepts NMEA or TSIP data messages, and uses GPS to reliably monitor field data and to navigate to positions.

What data collectors can be used with the GPS Pathfinder systems?

The GPS Pathfinder systems will connect to the TSC1 data collector (with Asset Surveyor software), or any device with an RS-232 serial port that can assert the turn-on signal, such as a Windows laptop or pen computer or Windows CE device.

What is the TSC1 data collector?

The TSC1 data collector is a rugged hand-held with 2MB of memory and a full alpha-numeric keypad for fast data entry. It can operate either the Asset Surveyor software or Survey Controller software.

Are there GPS Pathfinder receiver kits appropriate for third-party applications?

Yes, there are special kits configured to contain just the items needed for a third-party application. The GPS Pathfinder Office software can be purchased separately for applications that create files suitable for the Differential Correction utility.

Where can I obtain the GPS Pathfinder Controller software?

The GPS Pathfinder Controller software is free to download from www.trimble.com/support/files/pfc.htm.

What protocols are supported for position output?

The GPS Pathfinder receivers support TSIP (Trimble Standard Interface Protocol) and NMEA-0183 formats for output. The GPS Pathfinder receivers also all output 1PPS. The NMEA-0183 formats that can be output include: GGA, VTG, GLL, GSA, ZDA, GSV, and RMC.

Can the GPS Pathfinder systems be used as a base station?

The GPS Pathfinder Pro XR and Pro XRS receivers can be operated as a base station using the Trimble Reference Station (TRS) software and an appropriate antenna. Temporary base station files can also be collected with the field software. The GPS Pathfinder Power receiver cannot be used as a base station with the TRS software.

How are the GPS Pathfinder receivers powered?

The GPS Pathfinder receivers are powered by two 12V, 2.3Ah camcorder batteries.

How long do the batteries last off a single charge?

A pair of fully charged camcorder batteries will last about 4 hours for the GPS Pathfinder Pro XR and Pro XRS receivers, and about 8 hours for the GPS Pathfinder Power receiver. The GPS Pathfinder Pro XR and Pro XRS systems include an extra pair of camcorder batteries to ensure a full day's operation in the field. All three systems include a 4-bay battery charger.

What options are there for mounting the antenna?

There are three methods for mounting the antenna. You can mount the antenna on the Trimble GIS backpack. You can mount the antenna on a vehicle using the magnetic mount in the optional Vehicle Kit, or you can purchase a range pole to mount the antenna.

Are the GPS Pathfinder systems weatherproof?

Yes, all three GPS Pathfinder receiver systems are weatherproof. The antenna and receiver casings are dust proof, splash proof and shock resistant, and sealed to 5PSI.

Are the GPS Pathfinder receivers type approved?

Yes, the GPS Pathfinder receivers are FCC and CE type approved.

How are the GPS Pathfinder receivers different from the GPS Pathfinder Pocket receiver?

The GPS Pathfinder receivers are designed for high accuracy, real-time applications. The GPS Pathfinder Pocket receiver is designed to fit in your pocket and provide accuracies between 2 and 5 meters after differential correction. The real-time solutions are integrated in the GPS Pathfinder Pro XR, Pro XRS and Power receivers. Real-time solutions, such as the Beacon-on-a-Belt (BoB™) receiver, can be added to GPS Pathfinder Pocket receiver by using a splitter cable.

How are the GPS Pathfinder systems different from the GeoExplorer 3 system?

The GPS Pathfinder systems are designed for high accuracy, real-time applications for use on various field devices with a choice of field software. The GeoExplorer 3 system is designed as a

completely integrated GPS receiver, antenna and data collector that you can hold in one hand. It uses the GeoExplorer 3 software and provides accuracies between 1 and 5 meters after differential correction. The real-time solutions are integrated in the GPS Pathfinder Pro XR, Pro XRS and Power receivers. The BoB receiver can be added to the GeoExplorer 3 system receiver to create a cable-free, real-time solution.

Where can I find more information on the GPS Pathfinder systems?

For more information on the GPS Pathfinder systems, check out the GIS product catalog web page at www.trimble.com/products/pd_gi.htm

To find out who your local dealer is, use our dealer locator located at:

www.trimble.com/sales/locator/index.htm

How do I order a GPS Pathfinder system?

The GPS Pathfinder systems can be ordered in a variety of configurations. For pricing and ordering information please contact your local Trimble dealer. To find out who your local dealer is, use our dealer locator located at:

www.trimble.com/sales/locator/index.htm



Trimble Navigation Limited
645 North Mary Avenue
Post Office Box 3642
Sunnyvale, CA 94088-3642
1-800-827-8000
In North America
1-408-481-8000
outside North America
1-408-481-7744 Fax
<http://www.trimble.com>

