

# GPS subsystem

The International Cybernetics Corp. (ICC) MDR systems allow the use of a GPS subsystem to collect location referencing data. The subsystem may be used stand alone with a notebook computer or it can be direct input to the MDR computer so it can be referenced to other data collected by the MDR system. The GPS subsystem consists of an embedded GPS receiver, a roof antenna, and software for using the GPS data and integrating it with the other data acquisition systems. The GPS receiver provides a timing pulse to sync time to the MDR. GPS data is collected concurrently with the linear distance measurement instrumentation (DMI).

A higher accuracy differential GPS option is also available to improve the real time position accuracy to sub meter. This option allows processing differ-

ential to sub meter values when the proper RTCM or correction data is present. The GPS subsystem provides georeferencing for data records and video images at reference mileage intervals down to 1 m and less.

ICC uses a Trimble differential GPS receiver which utilizes the Choice technology. This technology combines a GPS receiver and a satellite differential receiver in the same housing. GPS data is recorded to show the position of each image and profile point. The GPS data provides information on Latitude, Latitude Direction, Longitude, Longitude Direction, Speed, Time, Quality, Height and Height Units.

The GPS receiver is a 12-channel, GPS and beacon receiver for precision applications. The system includes an integrated front-panel display and

keypad for easy configuration and integration without an external computer. Using free beacon differential corrections, the GPS receiver provides sub-meter positions to external computer, controllers, and other devices.

The Trimble differential GPS receiver utilizes free beacon differential signals. These receivers use a combined antenna with a single antenna cable. This configuration greatly improves the accuracy, reliability and availability of differential GPS corrections.

The Trimball receiver is designed with a built-in display and keyboard. The source and status of DGPS corrections can easily be determined for either of the two built-in beacon differential correction receivers or from an external differential correction source.



**DGPS Receiver supplied with Forward Imaging System  
for Real-Time Sub-Meter Position Accuracy**



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The medium frequency (MF) beacon receiver uses the broadcasts from government-established navigation beacon reference stations around the world. The L-band satellite differential correction receiver requires a subscription to a differential correction service and provides multiple vendor support. A built-in virtual reference station (VRS) permits the satellite corrections to be uniformly accurate over the entire satellite coverage area, without the degradation in accuracy associated with increasing distance from fixed reference stations. The MF beacon differential correction receiver built into the GPS system is a dual-channel, all-digital low noise design allowing it to receiver corrections at distances of hundreds of miles from the reference stations.



**This subsystem is designed to work with any ICC MDR, including, Lightweight Profilers and Friction Testers. Its accuracy has proven to be a real asset for construction projects or lining up high-speed profile and image data collected on multi-year network surveys.**



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