

## High accuracy DGPS (Differential Global Positioning System)

The DGPS is a high accuracy (sub one meter), new addition to the CE4 Commander blasting system. The market leading CE4 Commander system has been further enhanced with the DGPS technology to accurately detect blast hole positions.

High accuracy differential GPS will revolutionize the deployment and tagging of the 4G detonators for surface mining. Potential human error with regards to incorrect blast hole identification or incorrect delay assignment is practically eliminated. Apart from eliminating potential human error during deployment this new feature enables autonomous detonator tagging and /or blast hole logging.

### Features

- Using the “Plan Mode” the CE4-Tagger automatically detects the blast hole location using the GPS co-ordinate from ViewShot 3D and automatically assigns the correct delay to the detonator as per the blast design.
- The tagging process does not need to follow a specific tagging path.
- When drill rigs are not equipped with GPS logging, the DGPS Tagger can be used to accurately log the blast hole positions.

### Benefits

The CE4 Commander DGPS system is a ground-breaking technology advancement which:

- Eliminates potential human error by semi-autonomous tagging of blast holes essential to improve blast outcomes.
- Ensure accurate tagging of blast holes to improve blast outcomes.
- Easy, reliable and fast deployment to speed up the blasting process.
- Allows for future fully autonomous (robotic) deployment & tagging.

DGPS Tagger	
Temperature	-30 °C to +60 °C -22 °F to +140 °F
Battery	Internal 3.7 V Lithium Polymer
Battery Life	Approximately 8 hours at 25 °C (77 °F)
Weight and Dimensions	800 g / 1.76 lbs; 245 mm (L), 89 mm (W), 59 mm (H)
Software Upgrade	Via the USB connector in the CE4 Tagger, and a flash drive
Water and Dust Resistance	Conforms to IP57 design
Display	128 pixels x 128 pixels / 44.78 mm x 44.78 mm / 1.76 in x 1.76 in

DGPS Commander Reference Beacon	
Temperature	-30 °C to +60 °C -22 °F to +140 °F
Battery	Internal 3.7 V Lithium Polymer
Battery Life	Approximately 8 hours at 25 °C (77 °F)
Weight and Dimensions	2.1 kg / 4.6 lbs
Software Upgrade	Via a PC and a standard USB cable
Water and Dust Resistance	IP57
Display	200 x 96 pixels / 45.80 mm x 21.98 mm / 1.803 in x 0.866 in

**DISCLAIMER:**  
\* This technology is in the design/development phase and currently not available to end users.

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**Differential GPS Technology**  
combined with the  
**CE4 Commander System**

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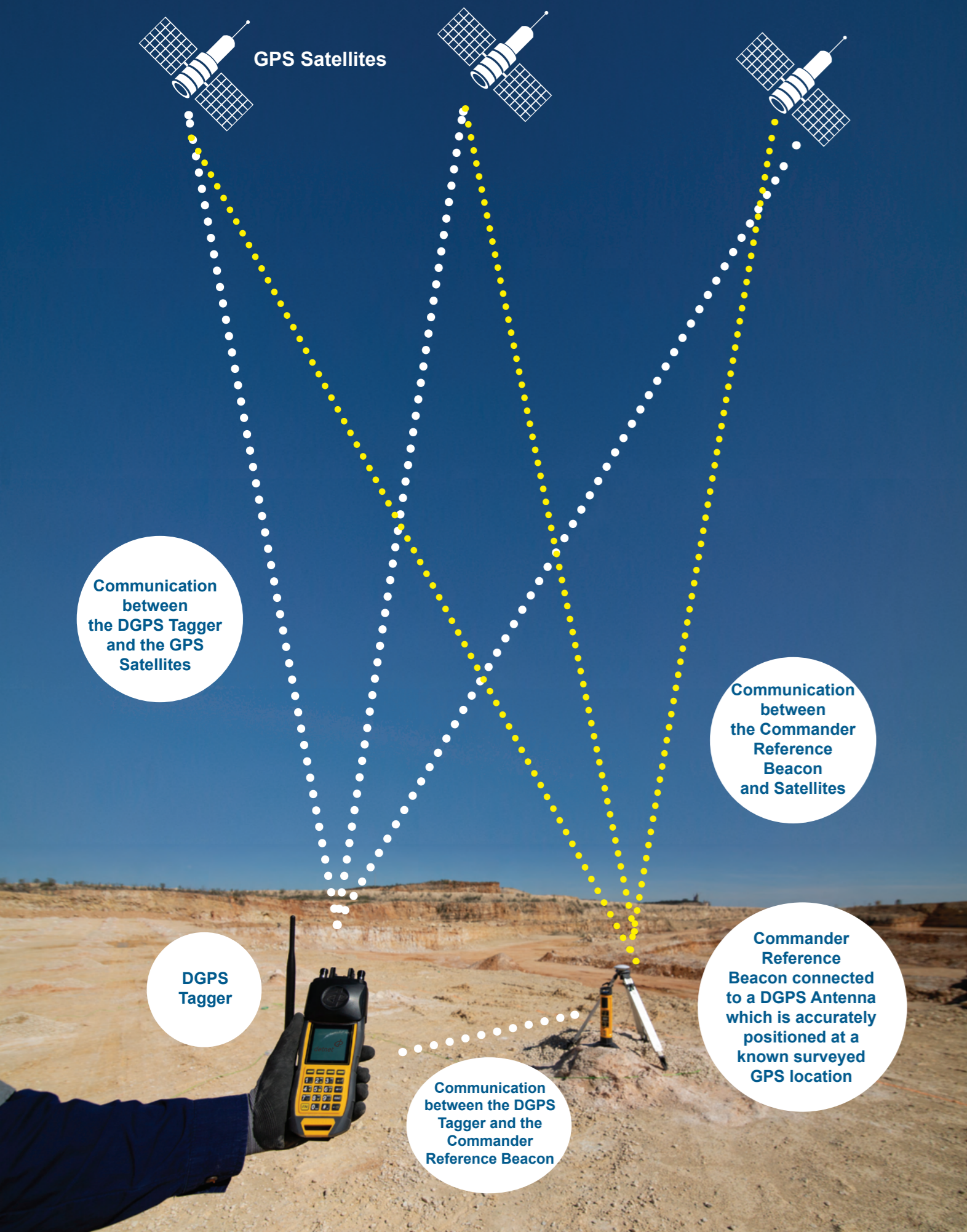
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# How does the DGPS system work?



## What is the difference between regular GPS and Differential GPS (DGPS)?

Normal GPS - Provides a position of an object on earth. It uses signals generated by satellites revolving around the earth.

GPS technology uses standalone receivers where the location is directly calculated but is also prone to errors such as satellite orbit errors, multi-path errors and clock errors. As a result, GPS can gain a nominal accuracy of 10 - 15 meters.

Therefore, normal GPS accuracy is not suitable for blast hole positioning. This is why Detnet has developed a user-friendly Differential-GPS (DGPS) system which is fully integrated with the CE4 Tagger and Commander system. The system provides sub one-meter accuracy for accurate blast hole tagging/logging.

DGPS - Is a vast improvement to GPS. It reduces or eliminates signal degradation, resulting in improved accuracy.

The accuracy in DGPS is achieved by using a reference receiver (Commander) at a known (surveyed location) position that broadcast correction data to one or more rovers (Taggers). The rovers then adjust their 'perception' of where they are using the correction data from the reference station.



## ViewShot 3D®

The ViewShot 3D blast software facilitates the planning, design and simulation of a blast through a flexible and feature-rich user interface.

With using DGPS in "plan mode", drill rig blast hole GPS coordinates is transferred to ViewShot 3D to do the final blast design timing sequence. The blast plan & timing sequence is then downloaded onto the DGPS tagger ready for tagging on the bench in "Plan Mode".

Alternatively, if drill rigs are not equipped with GPS accurate blast hole coordinates can now be logged by the DGPS tagger on the bench and then be transferred to the ViewShot 3D to provide for an accurate layout of the blast hole positions used in the blast design.

## Future application of this technology\*

- Stand alone module enabling DGPS capability on other equipment, MPU's etc.
- Common detonator list updated in real-time as multiple users or machines tag detonators.
- Centralised user interface - real time graphical update on deployment process

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# Differential GPS Technology combined with the CE4 Commander System

