Compact Survey System

Man-Portable Precision

Kearfott
a subsidiary of Astronautics

Compact Survey System

Precise Survey Data in GPS-Denied Environments

The Compact Survey System (CSS) is a revolutionary, man-portable, precision survey system that is 82% smaller and 75% lighter than the current U.S. Army survey system. It is designed for harsh operating conditions, including GPS-denied operations, and employs multiple aiding sources with an extended Kalman filter to produce a superior survey system for the soldier or marine. The CSS does not require a dedicated vehicle or a specific military occupational specialty survey (MOS), reducing infrastructure and the associated costs.

The CSS uses a ring laser gyro inertial navigation system coupled with a celestial camera with attitude aiding via star shots; integrated global positioning system receiver; forward-facing camera to establish azimuth references and replace the aiming circle and/or gun laying positioning system; and a menu-driven survey app running on an Android™ tablet enabling the user to be survey MOS agnostic.

Android is a trademark of Google LLC

Features & Benefits

- Man-Portable
- Accurate Pointing/Azimuth Reference & True North
- User-Friendly Android tablet
- Vehicle & Soldier MOS agnostic

CSS Product Specifications

System Characteristics			
Size		43.18 cm x 22.86 cm x 19.05 cm - 0.019 m^3 (17 in x 9 in x 7.5 in - 0.66 ft^3)	
Weight		16.32 kg (36 lbs)	
Power Source		CSS: 28 VDC or Internal Battery Pack for six hours of untethered operation (expandable to 12 hours), Battery is hot swappable Android™ Tablet: Powered via CSS connection	
Consumption		< 45 watts	
Input/Output User & Data Interfaces		Survey App via GFE Android™ tablet	
Performance Requirements			
Latitude of Operation		*0° to 45° N/S*	*45° to 65° N/S*
Initialization/Alignment Time[1]		10.0 minutes	20.0 minutes
ZUPT Interval		10.0 minutes	10.0 minutes
Horizontal Position CEP	Complete Data Fusion	4.0 meters	4.0 meters[1]
	GPS Aiding[2]	4.0 meters	4.0 meters
	Celestial Aiding[3]	Not Applicable	Not Applicable
	Inertial Navigation Unit (INU) Only[4]	6.0 m ≤ 5 KM 4.0 m ≤ 3 KM	18 m ≤ 27 KM
Altitude PE	Complete Data Fusion	2.0 meters	2.0 meters[1]
	GPS Aiding[2]	2.0 meters	2.0 meters
	Celestial Aiding[3]	Not Applicable	Not Applicable
	INU Only[4]	5.0 m ≤ 10 KM 2.0 m ≤ 4 KM	10.0 m ≤ 30 KM
Azimuth PE	Complete Data Fusion	0.40 mils	0.40 mils[1]
	GPS Aiding[2]	0.45 mils	0.50 mils
	Celestial Aiding[3]	0.25 mils	0.25 mils
	INU Only[4]	0.45 mils	0.50 mils

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