



GEDC-6 Gyro-Enhanced Navigation Sensor



Description

The Sparton GEDC-6 Attitude Heading Reference System (AHRS) provides superior performance by eliminating nearly all external magnetic disturbances that affect heading accuracy. The GEDC-6 offers highly dynamic response features combined with long-term stability and accuracy. It provides 3D absolute magnetic field measurement and full 360° tilt-compensated heading, pitch, and roll data. Proprietary adaptive algorithms provide accurate, in-field calibration, even in the presence of magnetic distortions due to ferrous objects positioned on the mounting platform. Further, the GEDC-6 corrects for world magnetic variation providing a True North output.

Features

- Best in class AdaptNav[™] adaptive algorithms outperform traditional Kalman filter based approaches by providing real-time optimization of sensor performance when used in varying magnetic and dynamic operating environments
- 2D and 3D adaptive in-field cal providing hard and soft magnetic interference compensation
- High dynamic heading accuracy enhanced by use of gyroscopes and fast sampling rate
- Simple 2-wire serial (UART) interface (3.3V logic level) with user-selectable baud rate
- Advanced sensing technology (3-axis magnetic, 3-axis acceleration, and 3-axis gyro)
- Built-in World Magnetic Model for accurate true heading anywhere in the world
- Rugged (epoxy encapsulated) construction and small physical size
- Magnetic and True North heading (yaw), pitch, and roll measurement
- Low power consumption and power management (Sleep Mode) functionality
- Powerful user programmable sensor customizations via NorthTek™ Forth interpreter
- Industry leading static heading accuracy and resolution
- Supports multiple communication protocols
- Full 360° rollover capability







Performance data applies to 25°C, Og Acceleration for Pitch/Roll unless otherwise specified:

Static Heading Accuracy 0.3° RMS Heading Repeatability 0.1° RMS¹ Static Pitch/Roll Accuracy 0.2° RMS Pitch/Roll Repeatability 0.1° RMS¹ Static Pitch/Roll Accuracy 0.2° RMS Pitch/Roll Repeatability 0.1° RMS Pitch/Roll Repeatability 0.1° RMS Accelerometer Range +/- 4g (+/- 1g)² Accelerometer Noise Density 126 µg/NHz Accelerometer Velocity Random Walk (VRW) 0.083 m/s Gyro Dynamic Range ± 480°/sec (± 300°/sec)² Gyro Noise Density 0.03 dps/√Hz Gyro Bias Stability 0.03 dps/√Hz Gyro Bias Stability 10.8°/Hr Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Magnetic Range ±1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) ± 80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure 95%, 70° C, 240 hrs Operat	Performance data applies to 25°C, 0g Acceleration for Pita	
Heading Repeatability	Dynamic Heading Accuracy	1.0° RMS ¹
Dynamic Pitch/Roll Accuracy 1.0° RMS Static Pitch/Roll Accuracy 0.2° RMS Pitch/Roll Repeatability 0.1° RMS Pitch/Roll Range ± 90°, ± 180° Accelerometer Range +/- 4g (+/- 1g)² Accelerometer Noise Density 126 μg/νHz Accelerometer Bias Stability 0.023 mg Accelerometer Velocity Random Walk (VRW) 0.063 m/s Gyro Dynamic Range ± 480°/sec (± 300°/sec)² Gyro Noise Density 0.03 dps/νHz Gyro Angular Random Walk (ARW) 1.5 deg/Sqr[Hr] Magnetic Range ±1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) ± 80° Mayametic Range ±1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) ± 80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6, 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Yes Operating Temp 4-0° to +85° C Storage Temp 4-0° to +85° C Humidity Resistance Meets MIL-STD-202G - Method 103A, Test Condition A Shock Resistance 1500, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G - Method 214B, Test Condition I/C Power Supply Input (Unregulated Voltage) Input Power, Sleep Mode (Typical @ 4V) 320 mW Input Power, Sleep Mode (Typical @ 4V) 3.3V Logic UART Interface Yes Able To Maintain Function When Inverted Yes Able To Maintain Function When Inverted Yes Auction Maintain Function When Inverted Yes Auction Heading Output Yes NorthTek™ User Programmable Customizations Yes Accelerometer Lago*	Static Heading Accuracy	0.3° RMS
Static Pitch/Roll Accuracy 0.2° RMS Pitch/Roll Repeatability 0.1° RMS Pitch/Roll Range ± 90°, ± 180° Accelerometer Range +/- 4g (+/- 1g)² Accelerometer Noise Density 126 µg/NHz Accelerometer Volocity Random Walk (VRW) 0.023 mg Accelerometer Velocity Random Walk (VRW) 0.063 m/s Gyro Dynamic Range ± 480°/sec (± 300°/sec)² Gyro Noise Density 0.03 dps//Hz Gyro Bias Stability 10.8°/Hr Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Maximum Magnetic Inclination (Dip) ± 80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Yes Operating Temp -40° to +85° C Storage Temp -40° to +85° C Humidity Resistance 95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 103A, Test Condition A Toog, 1 ms. Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Te	Heading Repeatability	0.1° RMS
Pitch/Roll Range ± 90°, ± 180° Accelerometer Range +/- 4g (+/- 1g)² Accelerometer Noise Density 126 µg/·Hz Accelerometer Velocity Random Walk (VRW) 0.023 mg Accelerometer Velocity Random Walk (VRW) 0.063 m/s Gyro Dynamic Range ± 480°/sec (± 300°/sec)² Gyro Noise Density 0.03 dps/·Hz Gyro Bias Stability 10.8°/Hr Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Magnetic Range ±1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) ± 80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Yes Operating Temp -40° to +85° C Storage Temp -40° to +85° C Humidity Resistance 95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 213A, Test Condition A 1500g, Ims Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 214A, Test Condition I/C Power Supply Input (Unregulate	Dynamic Pitch/Roll Accuracy	1.0° RMS ¹
Pitch/Roll Range	Static Pitch/Roll Accuracy	0.2° RMS
Accelerometer Range Accelerometer Noise Density Accelerometer Noise Density Accelerometer Bias Stability Accelerometer Velocity Random Walk (VRW) Gyro Dynamic Range \$\frac{\pmathbb{4}}{\pmathbb{4}}\$ \text{O.083 m/s} \$\text{Gyro Dynamic Range} \text{\$\frac{\pmathbb{4}}{\pmathbb{4}}\$ \text{O.03 dps/\pmathbb{4}z} \text{O.05 dps/\pmathbb{6}z} \text{O.00 dps/\pmathbb{6}z} O.00 dps/\pmath	Pitch/Roll Repeatability	0.1° RMS
Accelerometer Noise Density	Pitch/Roll Range	± 90°, ± 180°
Accelerometer Bias Stability	Accelerometer Range	+/- 4g (+/- 1g) ²
Accelerometer Velocity Random Walk (VRW) Gyro Dynamic Range \$\frac{1}{2} 480^{\circ}\sec (\pm 300^{\circ}\sec)^2}\$ Gyro Noise Density \$\frac{0.03 \dsys^{\circ}\Hz}{0.03 \dsys^{\circ}\Hz}\$ Gyro Rias Stability \$\frac{10.8^{\circ}\Hz}{10.8^{\circ}\Hz}\$ Gyro Angular Random Walk (ARW) \$\frac{15 \dec{6g/Sqrt[\Hr]}{10.80^{\circ}\Hr}\$ Magnetic Range \$\pm \pm 1.2 \dec{Gauss} \(\pm \pm \text{0 MGauss}\)^2 Maximum Magnetic Inclination (Dip) \$\pm \pm 80^{\circ}\$ Update Rate (Samples/Sec) \$\text{100}\$ Baud Rate \$\text{0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud}\$ Dimensions L x W x H \$\text{42 x 28 x 11 mm} \text{(1.66 x 1.11 x 0.43 inches)}\$ Mass \$\text{16g}\$ Encapsulated or Enclosure \$\text{7es}\$ Operating Temp \$\text{40^{\circ} to +85^{\circ} C}\$ Undity Resistance \$\text{480^{\circ} to +85^{\circ} C}\$ Humidity Resistance \$\text{480^{\circ} to +85^{\circ} C}\$ Hets MIL-STD-202G - Method 103A, Test Condition A \$\text{1500g, mrs Pulse, Half-Sine Wave}\$ Meets MIL-STD-202G - Method 213B, Test Condition F Vibration Resistance \$\text{Meets MIL-STD-202G - Method 213B, Test Condition F}\$ Obout Power, Operating Mode (Typical @ 4V) Input Power, Operating Mode (Typical @ 4V) 12 mW 3.3V Logic UART Interface \$\text{2D and 3D In-Field Calibration}\$ Able To Maintain Function When Inverted \$\text{Yes}\$ Quaternion/Rotation Matrix Output \$\text{Yes}\$ North Tek \text{\text{NU Ser Programmable Customizations}\$ Yes	Accelerometer Noise Density	126 μg/√Hz
Gyro Dynamic Range ± 480°/sec (± 300°/sec)² Gyro Noise Density 0.03 dps/√Hz Gyro Roise Stability 10.8°/Hr Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Magnetic Range ±1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) ± 80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Yes Operating Temp -40° to +85° C Storage Temp -40° to +85° C Humidity Resistance Meets MIL-STD-202G – Method 103A, Test Condition A Shock Resistance 1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition F .06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/C +4 to +10 V DC Input Power, Operating Mode (Typical @ 4V) 320 mW Input Power, Sleep Mode (Typical @ 4V) 320 mW Input Power, Sleep Mode (Typical @ 4V) 12 mW 3.3V Logic UART Interface Yes 2D and 3D In-Field Calibration	Accelerometer Bias Stability	0.023 mg
Gyro Noise Density Gyro Bias Stability 10.8°/Hr Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Magnetic Range 4.1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) 4.80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Operating Temp 4-0° to +85° C Storage Temp 4-40° to +85° C Storage Temp 4-40° to +85° C Weets MIL-STD-202G – Method 103A, Test Condition A 1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition F 0.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/C Power Supply Input (Unregulated Voltage) Input Power, Operating Mode (Typical @ 4V) Input Power, Sleep Mode (Typical @ 4V) Input Power, Sleep Mode (Typical @ 4V) 12 mW 3.3V Logic UART Interface Possible Adaptive Adapti	Accelerometer Velocity Random Walk (VRW)	0.063 m/s
Gyro Bias Stability Gyro Angular Random Walk (ARW) 1.5 deg/Sqrt[Hr] Magnetic Range 4.1.2 Gauss (±900 MGauss)² Maximum Magnetic Inclination (Dip) 4.80° Update Rate (Samples/Sec) 100 Baud Rate 0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud Dimensions L x W x H 42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches) Mass 16g Encapsulated or Enclosure Operating Temp 4-40° to +85° C Storage Temp 4-40° to +85° C Humidity Resistance Humidity Resistance Shock Resistance Shock Resistance Weets MIL-STD-202G – Method 103A, Test Condition A 1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition F 0.66 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/C Power Supply Input (Unregulated Voltage) 1-4 to +10V DC Input Power, Operating Mode (Typical @ 4V) 1.2 mW 3.3V Logic UART Interface 2D and 3D In-Field Calibration Able To Maintain Function When Inverted Quatermion/Rotation Matrix Output Yes NorthTek™ User Programmable Customizations Yes	Gyro Dynamic Range	± 480°/sec (± 300°/sec) ²
Gyro Angular Random Walk (ARW)1.5 deg/Sqrt[Hr]Magnetic Range±1.2 Gauss (±900 MGauss)²Maximum Magnetic Inclination (Dip)±80°Update Rate (Samples/Sec)100Baud Rate0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaudDimensions L x W x H42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches)Mass16gEncapsulated or EnclosureYesOperating Temp-40° to +85° CStorage Temp-40° to +85° CHumidity Resistance955, 70° C, 240 hrsMeets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance0.6 B Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)320 mW1nput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Gyro Noise Density	0.03 dps/√Hz
Magnetic Range±1.2 Gauss (±900 MGauss)²Maximum Magnetic Inclination (Dip)±80°Update Rate (Samples/Sec)100Baud Rate0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaudDimensions L x W x H42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches)Mass16gEncapsulated or EnclosureYesOperating Temp-40° to +85° CStorage Temp-40° to +85° CHumidity Resistance95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance0.6 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)320 mWJay Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Gyro Bias Stability	10.8°/Hr
Maximum Magnetic Inclination (Dip)± 80°Update Rate (Samples/Sec)100Baud Rate0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaudDimensions L x W x H42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches)Mass16gEncapsulated or EnclosureYesOperating Temp-40° to +85° CStorage Temp-40° to +85° CHumidity Resistance95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Gyro Angular Random Walk (ARW)	1.5 deg/Sqrt[Hr]
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Mass16gEncapsulated or EnclosureYesOperating Temp-40° to +85° CStorage Temp-40° to +85° CHumidity Resistance95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Baud Rate	0.3, 1.2, 2.4, 4.8, 9.6; 19.2; 38.4; 57.6; 115.2 kbaud
Encapsulated or Enclosure Operating Temp -40° to +85° C Storage Temp -40° to +85° C Humidity Resistance Humidity Resistance Shock Resistance Shock Resistance Vibration Resistance Power Supply Input (Unregulated Voltage) Input Power, Operating Mode (Typical @ 4V) Input Power, Sleep Mode (Typical @ 4V) 3.3V Logic UART Interface Description Power Able To Maintain Function When Inverted Quaternion/Rotation Matrix Output Tyes NorthTek™ User Programmable Customizations P-40° to +85° C -40° to +85° to -40° to +85° to -40° t	Dimensions L x W x H	42 x 28 x 11 mm (1.66 x 1.11 x 0.43 inches)
Operating Temp -40° to +85° C Storage Temp -40° to +85° C Humidity Resistance Shock Resistance Shock Resistance Wibration Resistance Power Supply Input (Unregulated Voltage) Input Power, Operating Mode (Typical @ 4V) Input Power, Sleep Mode (Typical @ 4V) 3.3V Logic UART Interface Dand 3D In-Field Calibration Author	Mass	16g
Storage Temp-40° to +85° CHumidity Resistance95%, 70° C, 240 hrs Meets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Encapsulated or Enclosure	Yes
Humidity Resistance Power Supply Input (Unregulated Voltage)	Operating Temp	-40° to +85° C
Humidity ResistanceMeets MIL-STD-202G – Method 103A, Test Condition AShock Resistance1500g, 1ms Pulse, Half-Sine Wave Meets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Storage Temp	-40° to +85° C
Shock ResistanceMeets MIL-STD-202G – Method 213B, Test Condition FVibration Resistance.06 dB Power Spectral Density, 9.26 G RMS Meets MIL-STD-202G – Method 214A, Test Condition I/CPower Supply Input (Unregulated Voltage)+4 to +10V DCInput Power, Operating Mode (Typical @ 4V)320 mWInput Power, Sleep Mode (Typical @ 4V)12 mW3.3V Logic UART InterfaceYes2D and 3D In-Field CalibrationYesAble To Maintain Function When InvertedYesQuaternion/Rotation Matrix OutputYesTrue North Heading OutputYesNorthTek™ User Programmable CustomizationsYes	Humidity Resistance	
Meets MIL-STD-202G - Method 214A, Test Condition I/C Power Supply Input (Unregulated Voltage) +4 to +10V DC Input Power, Operating Mode (Typical @ 4V) 320 mW Input Power, Sleep Mode (Typical @ 4V) 12 mW 3.3V Logic UART Interface Yes 2D and 3D In-Field Calibration Yes Able To Maintain Function When Inverted Yes Quaternion/Rotation Matrix Output Yes True North Heading Output Yes NorthTek™ User Programmable Customizations Yes	Shock Resistance	Meets MIL-STD-202G – Method 213B, Test Condition F
Input Power, Operating Mode (Typical @ 4V) 320 mW Input Power, Sleep Mode (Typical @ 4V) 12 mW 3.3V Logic UART Interface Yes 2D and 3D In-Field Calibration Yes Able To Maintain Function When Inverted Yes Quaternion/Rotation Matrix Output Yes True North Heading Output Yes NorthTek™ User Programmable Customizations Yes	Vibration Resistance	
Input Power, Sleep Mode (Typical @ 4V) 3.3V Logic UART Interface 2D and 3D In-Field Calibration Able To Maintain Function When Inverted Quaternion/Rotation Matrix Output True North Heading Output NorthTek™ User Programmable Customizations 12 mW Yes Yes Yes	Power Supply Input (Unregulated Voltage)	+4 to +10V DC
3.3V Logic UART Interface 2D and 3D In-Field Calibration Able To Maintain Function When Inverted Quaternion/Rotation Matrix Output True North Heading Output NorthTek™ User Programmable Customizations Yes Yes Yes	Input Power, Operating Mode (Typical @ 4V)	320 mW
2D and 3D In-Field Calibration Yes Able To Maintain Function When Inverted Yes Quaternion/Rotation Matrix Output Yes True North Heading Output Yes NorthTek™ User Programmable Customizations Yes	Input Power, Sleep Mode (Typical @ 4V)	12 mW
2D and 3D In-Field Calibration Yes Able To Maintain Function When Inverted Yes Quaternion/Rotation Matrix Output Yes True North Heading Output Yes NorthTek™ User Programmable Customizations Yes	3.3V Logic UART Interface	Yes
Able To Maintain Function When Inverted Quaternion/Rotation Matrix Output True North Heading Output NorthTek™ User Programmable Customizations Yes Yes	<u> </u>	
Quaternion/Rotation Matrix Output Yes True North Heading Output Yes NorthTek™ User Programmable Customizations Yes		
True North Heading Output NorthTek™ User Programmable Customizations Yes Yes	Quaternion/Rotation Matrix Output	
NorthTek™ User Programmable Customizations Yes	<u>'</u>	
·	9 .	
	Includes World Magnetic Model	Yes



¹ Dynamic heading accuracy derived from Scorsby table set for 7 RPM, 30 degrees of inclination

² Specifications in parentheses represent current limits of calibration methodology

Applications

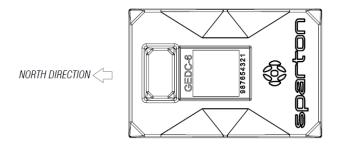
- Weather, data, and ocean surveillance
- Electro-optical target designation sensors
- · Accurate vehicle attitude position and orientation sensing
- Precision autonomous vehicle guidance
- Ground, sea surface and sub sea surface survey and monitoring

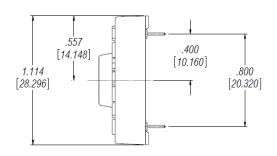
Connections

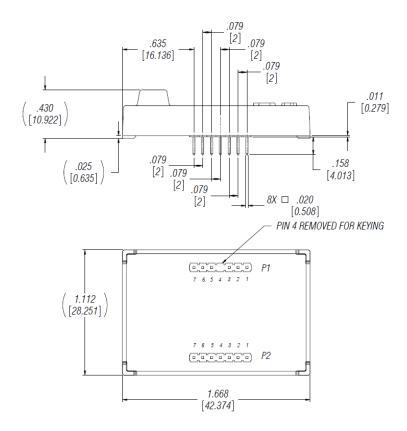
Connector - Pin	Pin Name	I/O	Function
Number			
P1-1	V_TEST	0	3.3V regulator output for test purposes (factory use only)
P1-2	DEBUG_RXD	I	3.3V logic RXD Input to Debug Port (factory use only)
P1-3	DEBUG_TXD	0	3.3V logic TXD Output from Debug Port (factory use only)
P1-4		N/A	Pin removed for keying
P1-5	#WP_EEPROM	I	3.3V logic, active-low EEPROM write protect
			(the pin has 10kΩ pull-down)
P1-6	Factory Use	I	Do not connect (factory use only)
P1-7	GND	N/A	System Ground
P2-1	V+	I	+4 to +10V DC power supply input. Max load = 80mA
P2-2	USER RXD		3.3V logic RXD input to User Com Port
P2-3	USER_TXD	0	3.3V logic TXD output from User Com Port
P2-4	#RESET	I	3.3V logic, active-low reset input (the pin has a weak pull-up)
P2-5	#EINT0	I	3.3V logic, active-low interrupt input (the pin has
			a weak pull-up). Used for programming
			purposes
P2-6	GND	N/A	System Ground
P2-7	GND	N/A	System Ground



Mechanical Data







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