

NorthTek™

Programmable Platform

Description

Most inertial systems only allow the user to modify basic elements, however, with Sparton's NorthTek™ enabled [DC-4E, AHRS-8, AHRS-M2, and IMU-10], the user can program both basic and advanced features. Sparton's NorthTek™ technology allows the end user to write and execute custom, user-defined applications, and specific algorithms right in the sensor! NorthTek™ allows the designer to directly interface with real-time sensor data and make custom computations specifically for their application. With NorthTek™ – you possess power unsurpassed in the industry – no other sensor offers this level of customization. Unique solutions for tomorrow's challenges – available today.

Features and Benefits

- Full access to all adjustable parameters
- Real time solutions environment, embedded into the module
- Allows system designer to embed custom profiles that adapt to changing orientation, varying magnetic fields and other dynamic situations within the host device
- Gives the user the ability to modify the startup behavior with simple [preloaded] commands
- Ability to use the secondary sensors for emergency condition monitoring, such as being upside down or in free fall
- Unlimited user defined capability in a full applications environment
- Programs may be stored in non-volatile memory

Download Now!

Available for download are Sparton NorthTek™ application programs on www.spartonnavex.com

How does it Work?

- User designs a NorthTek™ program using the Forth programming language
- Program is loaded to the DC-4E, AHRS-8, AHRS-M2, or IMU-10 inertial system with a simple terminal emulator (Can also be programmed from the host application)
- Program can be stopped, replaced with another NorthTek™ program, and loaded as many times as desired
- A single custom command starts the user application
- Normal selection of data output continues without interruption
- NorthTek™ application runs in parallel with normal sensor operation

Want to Learn More?

Additional information on NorthTek™ is available on our web site at www.spartonnavex.com/northtek, where NorthTek™ related Application Notes and the NorthTek™ System Programming Guide reside.



Applications

The following list contains examples of available NorthTek™ Apps, and illustrates the customization potential of our cutting edge technology built right into each device. As an added benefit, these programs are available at no additional cost to purchasers of Sparton's DC-4E, AHRS-8, AHRS-M2, and IMU-10.

- **apr_tare.4th**

The apr_tare.4th script allows the user to completely define the orientation of the target device by specifying the yaw, pitch, and roll. After the TARE operation, the output of the Nav sensor will match the intended orientation of the target device. Care must be taken to insure that the target device is actually oriented to the correct yaw, pitch, and roll relative to Earth's magnetic and gravity vectors before the TARE operation otherwise errors will be introduced.

- **Recal.4th**

Recal.4th contains programs that allow a user to swap between two Magnetic Field Calibration data sets in real time. The nominal calibration is temporarily stored by command and overwritten with a new set for alternate host configurations at runtime. The program is easily extended to be able to handle multiple sets of calibration data for multiple operating modes of the host device.

- **Cal3d.4th**

Cal3d.4th contains programs that allow a user to perform a 3D in-field calibration with a simple serial port. The program is interactive and provides helpful prompts to instruct the user at each step of the process. This program serves as a baseline for user expansion for custom user calibration.

- **Turtle.4th**

Turtle.4th is a sample program that tests for the sensor being upside down. This sample program illustrates how to access the raw data in the sensor and use it to implement a safety or convenience feature in addition to the normal sensor operation.

- **FF.4th**

FF.4th is a free fall detector program. This program illustrates how to access the raw sensor data and how to access the matrix math library to compute a vector magnitude on the 3D acceleration vector. This vector is compared to a threshold to determine if the sensor is in free fall, and if so, a warning is issued on the serial port.

- **Filter.4th**

Filter.4th illustrates how to obtain the processed sensor data, make real time decisions based on that data, and output results based on that data. This program reads the current heading at startup and then outputs a new heading only if the heading changes by more than 10 degrees. Easily extendable to other criteria, this program serves as a baseline for controlled output data based on conditions, rather than streaming data.

- **NMEArpt.4th**

The NMEArpt.4th program implements two backward compatibility features to emulate the startup behavior of the SP3004 sensor. This program produces the "BX" baud rate check string at startup and also provides the repeating NMEA output at startup.

These Apps are only a small sample of the power of NorthTek's™ potential and its benefits. The possibilities of NorthTek™ technology are virtually endless!



Please visit us at www.spartonnavex.com for additional information on the Sparton Navigation and Exploration line of inertial systems.
For more information and detailed specifications scan QR code.
For support, please e-mail: productsupport@sparton.com

