

# Expand the possibilities!

Integrate Onyx with your solution.



## ONYX

- 255 Channel GNSS Engine
- Multi-Constellation Support
  - GPS & GLONASS Nav
  - BEIDOU & GALILEO Measurements
- Software Upgradeable Board
- Integrated StarFire™ with 5 cm global accuracy
- Ultra RTK™ (GPS + GLONASS)



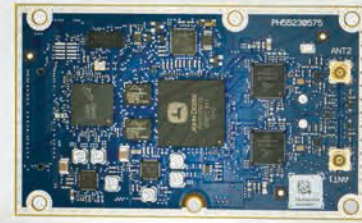
**NAVCOM**  
A John Deere Company

[www.navcomtech.com](http://www.navcomtech.com)

# ONYX

## Integrated StarFire™/RTK GNSS Engine

NavCom's next generation GNSS engine provides 255 channel tracking, including multi-constellation support for GPS and GLONASS. It also provides patented interference rejection and anti-jamming capabilities. Integrated StarFire™ five centimeter global accuracy makes *Onyx* ideal for high accuracy surveying, control and guidance of mobile platforms. The compact form factor offers durability and reliability for your precise positioning system integration. StarFire is supported on 3-separate channels providing on-board capability for tracking redundant or enhanced signals.



### FEATURES

- "All-in-view" parallel tracking with 255 channels
- SBAS (WAAS/EGNOS/MSAS/GAGAN) tracking
- Built-in 3-channel StarFire receiver and demodulator
- GPS:
  - L1 – CA, P1
  - L2 – L2CA, P2, L2CL
  - L5 – L5Q
- Glonass:
  - G1 – G1C
  - G2 – G2C
- Beidou:
  - B1 – B1I
  - B2 – B2I
- Galileo:
  - E1 – E1B
  - E5A – ESAQ
  - E5B – E5BQ
- High sensitivity / low signal level tracking
- Fast acquisition / re-acquisition
- Superior interference suppression (both in-band & out-of-band)
- Patented multipath rejection
- RTK Extend™
- StarFire Over the Air (OTA) Licensing Capable
- Minimal data latency
- Data message formats
  - NMEA-0183: ALM, GBS, GGA, GLL, GRS, GSA, GST, GSV, RMC, RRE, VTG, ZDA, NCT proprietary
  - Differential Correction: SBAS and StarFire (proprietary)
  - RTK Correction: RTCM 2.3, 3.0, and MSM, NavCom Proprietary UltraRTK™
  - Receiver Control: NavCom Proprietary commands (ASCII/binary)
- Configurable as RTK base or rover
- Programmable output rates
- Event marker input
- 1 PPS output
- Communication Ports: 2 x TTL (3V)



### PERFORMANCE<sup>1</sup>

- |                                                                        |                                   |
|------------------------------------------------------------------------|-----------------------------------|
| <b>• Accuracy (RMS)</b>                                                | <b>Horizontal / Vertical</b>      |
| RTK:                                                                   | <40km 1cm + 0.5ppm / 2cm + 1ppm   |
| StarFire                                                               | <5cm / <10cm                      |
| Code DGPS:                                                             | <200kms 45cm + 3ppm / 90cm + 3ppm |
| Velocity:                                                              | 0.01ms                            |
| RTK Extend (<15min)                                                    | 3cm + 1ppm / 6cm + 2ppm           |
| Heading <sup>2</sup>                                                   | 0.1°                              |
| <b>• User programmable output rates</b>                                |                                   |
| Position Velocity Time:                                                | 1Hz, 5Hz, 10Hz, 25Hz              |
| Raw data:                                                              | 1Hz, 5Hz, 10Hz, 25Hz              |
| <b>• Data Latency</b>                                                  |                                   |
| Position Velocity Time:                                                | < 10ms at all rates               |
| Raw measurement data:                                                  | < 10ms at all rates               |
| <b>• Time-to-first-fix</b>                                             |                                   |
| Cold / Warm / Hot                                                      | < 65s / < 55s / < 20s             |
| (typical values measured per ION-STD 101)                              |                                   |
| <b>• Dynamics (Speed &amp; altitude are restricted by export laws)</b> |                                   |
| Acceleration:                                                          | up to 6g                          |
| Speed:                                                                 | < 515 m/s (1000knots)             |
| Altitude:                                                              | < 18.3 km (60,000ft)              |

### PHYSICAL/ENVIRONMENTAL

- |                                |                                                                                 |
|--------------------------------|---------------------------------------------------------------------------------|
| <b>• Size (L x W x H):</b>     | 100mm x 60.7 mm x 13.27 mm<br>(3.94in x 2.39in x 0.52in)                        |
| <b>• Weight:</b>               | 30g (1 oz)                                                                      |
| <b>• Power</b>                 |                                                                                 |
| Input:                         | + 3.3V, ± 5% at 0.8A                                                            |
| Output:                        | accepts up to +5.5V ± 0.5V at 100mA<br>(for antenna bias via RF connector)      |
| <b>• Temperature (ambient)</b> |                                                                                 |
| Operating & Storage:           | -40°C to +70° C (-40°C to +85° C)                                               |
| <b>• Connectors</b>            |                                                                                 |
| I/O & PWR:                     | 40 pin dual row socket header<br>2 - Configurable serial ports up to 230.4 Kbps |
| RF:                            | 2x MCX-F connectors                                                             |

(1) Performance dependent on location, satellite geometry, atmospheric conditions, and GNSS corrections.

(2) Requires two Onyx boards

Technical specifications subject to change at NavCom's discretion

## NAVCOM

A John Deere Company

20780 Madrona Avenue, Torrance, CA 90503 USA

Tel: +1 310 381 2000 • Fax: +1 310 381 2001

www.navcomtech.com • sales@navcomtech.com