



SAPHIRE™

- 66 Channel GNSS Engine
- Multi-Constellation Support
 - GPS, GLONASS, GALILEO
- Software Upgradeable Board
- Integrated StarFire™ with decimeter global accuracy
- Ultra RTK™ (GPS + GLONASS)



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NavCom's next generation GNSS engine provides 66 channel tracking, including multi-constellation support for GPS, Glonass and Galileo. It also provides patented interference rejection and anti-jamming capabilities.

Integrated StarFire™ decimeter global accuracy makes Sapphire 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.

Offering the "freedom to choose," Sapphire is software upgradeable, allowing users to transform the engine from a single frequency receiver to multi-frequency and anything in between with software optioning alone saving users the expense of purchasing new hardware. This flexible framework makes Sapphire ideal for any application.

FEATURES

- "All-in-view" parallel tracking with 66 channels
- SBAS (WAAS/EGNOS/MSAS/GAGAN) tracking
- Built-in StarFire receiver and demodulator
- L1, L2, L5, G1 & G2 full wavelength carrier phase tracking
- C/A, P1, P2, L2C, L5, G1 & G2 code tracking
- Software upgradeable for Galileo signal reception (E1, E5a)
- 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: RTCM 2.3 and 3.0, SBAS, and StarFire (proprietary)
 - RTK Correction: CMR/CMR+, RTCM, NavCom Proprietary UltraRTK™
 - Receiver Control: NavCom Proprietary commands (ASCII)
- Configurable as RTK base or rover
- Programmable output rates
- Event marker input
- 1 PPS output
- Communication Ports: 4 x RS232, 1 x SPI Interface



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SPECIFICATIONS

PERFORMANCE⁽¹⁾

- | Accuracy (RMS) | Horizontal / Vertical |
|---------------------------------|--|
| RTK: <40km
StarFire | 1cm + 0.5ppm / 2cm + 1ppm
<10cm / <15cm |
| Code DGPS: <200kms
Velocity: | 45cm + 3ppm / 90cm + 3ppm
0.01ms |
| RTK Extend (<15min) | 3cm + 1ppm / 6cm + 2ppm |
- User programmable output rates:

Position Velocity Time:	1Hz, 5Hz, 10Hz, 25Hz, 50Hz, 100Hz
Raw data:	1Hz, 5Hz, 10Hz, 25Hz, 50Hz, 100Hz
 - Data Latency:

Position Velocity Time:	< 10ms at all rates
Raw measurement data:	< 10ms at all rates
 - Time-to-first-fix:

Cold / Warm / Hot	< 60s / < 50s / < 20s
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 (typical values measured per ION-STD 101)
 - Dynamics (Speed & altitude are restricted by export laws):

Acceleration:	up to 6g
Speed:	< 515 m/s (1000knots)
Altitude:	< 18.3 km (60,000ft)

PHYSICAL/ENVIRONMENTAL

- Size (L x W x H): 120 mm x 100 mm x 11 mm
(4.73 in x 3.94 in x 0.43 in)
- Weight: 113g (4 oz)
- Power:

Input:	+3.3V ± 0.1V at 1.6A
Output:	+5V ± 0.5V at 100mA

 (for antenna bias via RF connector)
- Temperature (ambient):

Operating & Storage:	-40° to +85° C (-40° to +185° F)
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- Connectors:

I/O & PWR:	36 pin dual row socket header
	4 - Configurable serial ports up to 115.2 Kbps
	1 - SPI Interface
RF:	MCX-F

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

Technical specifications subject to change at NavCom's discretion