



# RT-3020S RT-3020M

## gps products

NavCom's RT-3020S and RT-3020M modular RTK GPS receivers deliver high performance in a robust package for vehicular, reference and pack installations. Onboard 64MB memory and a geodetic quality antenna enable millimeter level accuracy from post-processing.

### APPLICATIONS

The RT-3020S is packaged for mobility. It can be used for construction stakeout, boundary surveys, high order control surveys, and topographic surveys in rough terrain. The system can be powered from portable, rechargeable batteries, which allow for a full day's operation.

The RT-3020M is a real-time kinematic (RTK) sensor specifically designed for machine control applications in construction, agriculture, mining and military. Machine control dynamic environments require virtually instantaneous position reports multiple times per second. The RT-3020M delivers position updates computed at up to 25-Hz with less than 20ms latency. The horizontal accuracy of 1 cm or better and the vertical accuracy of 2 cm or better are maintained as each output is independently calculated based on an actual GPS position measurement, as opposed to an extrapolation between 1Hz measurements.

### BENEFITS

The receivers use our NCT-2100D GPS Engine, the fourth generation of the Touchstone™ ASIC family, of which more than 25,000 are in use worldwide. This proven receiver technology provides leading edge interference suppression, multi-path mitigation, and measurement accuracy. With a signal-to-noise ratio advantage over competing technology, the user benefits from improved real-time positioning with instantaneous centimeter-level accuracy.

The RTK algorithm developed by NavCom provides fast initialization and the NCT ultra compact binary data format for RTK ensures robust data throughput on the built-in spread spectrum radio. The sensor can utilize NCT, RTCM, CMR and CMR+ data streams from other base stations to minimize base rover separation. Each RT-3020 can be used as either a Base or a Rover to meet your changing needs as the survey progresses.

For GIS applications, your base station can be used as another rover. The two onboard WAAS/EGNOS channels, NavCom's enhanced SBAS algorithm and dual frequency GPS typically provide half-meter real-time accuracy.

### FLEXIBLE INTERFACE

The RT-3020 receiver is easily configured by the provided Windows® based utility program. For system integrators needing maximum flexibility, the receivers offer NavCom's binary user interface that allows complete command and control of the GPS and spread spectrum radio receivers, thus enabling customization of the interface and receiver operation.

### FEATURES

- "All-in-view" tracking on 26 channels (12 L1/L2 GPS + 2 SBAS)
- L1 & L2 full wavelength carrier phase tracking
- 2 dedicated WAAS/EGNOS channels
- C/A, P1 & P2 code tracking
- RTK processing with on-the-fly initialization
- User configurable as base or rover
- User programmable measurement and navigation data rates
- Integrated Spread Spectrum Radio (SSR)
- 64MB internal memory for data recording
- NavCom's ultra compact RTK format, RTCM, CMR or CMR+
- Output NMEA 0183 or NavCom binary format
- Superior interference suppression
- Patented multipath rejection
- LED Display for GPS, Link and Base
- CAN bus interface (RT-3020M Only)
- 1PPS Output (RT-3020M Only)
- Event Marker Input (RT-3020M Only)
- TruBlu™ Wireless Connectivity, Bluetooth® compatible

### UPGRADES

- Raw measurement data rates up to 50Hz
- Positioning rates up to 25Hz



## Modular RTK GPS

sensor with built-in

radio modem delivers

centimeter-level

accuracy in

flexible package

www.navcomtech.com



A John Deere Company

## RT-3020 Series

### TECHNICAL SPECS

#### PHYSICAL/ENVIRONMENTAL

- Size (L x W x H): .....8.18in x 5.67in x 3.06in  
(208mm x 144mm x 78mm)
- Weight: .....4lbs (1.81 kg)
- External Power:  
Input Voltage: .....10 VDC to 30 VDC  
Consumption: .....< 5 W
- Connectors:  
I/O: .....2 x 7 pin Lemo  
DC Power: .....4 pin Lemo  
SSR Antenna: .....BNC  
GPS Antenna: .....TNC-F  
CAN bus + Event: .....5 pin Lemo (RT-3020M Only)  
1PPS Output: .....BNC (RT-3020M Only)
- Temperature (ambient):  
Operating: .....-40° to +55°C (-40° to +131°F)  
Storage: .....-40° to +85°C (-40° to +185°F)
- Humidity: .....95% non-condensing
- Tested in accordance with MIL-STD-810F for:  
low pressure, solar radiation, rain, humidity, salt fog,  
sand & dust, and vibration

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

- Measurement Precision (RMS):  
Raw C/A code: .....20 cm @ 42 dB-Hz  
Raw carrier phase noise: .....L1: 0.95 mm @ 42 dB-Hz  
.....L2: 0.85 mm @ 42 dB-Hz
- Velocity: .....0.01 m/s
- Enhanced SBAS (WAAS/EGNOS) Positioning Accuracy (RMS):  
Horizontal: .....0.5m  
Vertical: .....0.7m
- RTK Positioning <10kms (RMS):  
Horizontal: .....1 cm + 1ppm  
Vertical: .....2 cm + 1ppm
- Code Differential GPS Positioning <200kms (RMS):  
Horizontal: .....12 cm + 2ppm  
Vertical: .....25 cm + 2ppm

- User programmable output rates:  
Position Velocity Time: .....5 Hz (10Hz, 25Hz Optional)  
Raw measurement data: .....5 Hz (10Hz, 25Hz, 50Hz Optional)
- Data Latency:  
Position Velocity Time: .....< 20 ms at all rates  
Raw measurement data: .....< 20 ms at all rates
- Time-to-first-fix:  
Cold Start, Satellite Acquisition: .....< 60 seconds (typical)  
Satellite Reacquisition: .....< 1 second
- Dynamics: (Speed & Altitude restricted by export laws)  
Acceleration: .....up to 6g  
Speed: .....< 1,000 knots (515 m/s)  
Altitude: .....< 60,000 ft (18.3km)
- 1PPS Resolution: .....12.5ns relative accuracy  
(RT-3020M Only)

<sup>1</sup> Performance dependent on location, satellite geometry, atmospheric conditions and GPS corrections.

#### COMMUNICATIONS

- Messages:  
Data/Control: .....NCT Binary Messages  
NMEA: .....ALM, GGA, GLL, GSA, GST, GSV,  
RMC, VTG, ZDA
- Corrections: .....RTCM Code (Msg. 1, 3 & 9)  
SBAS (WAAS/EGNOS)
- RTK Corrections: .....NCT Proprietary  
RTCM (Msg. 18/19 or 20/21)  
CMR (Msg. 0, 1, 2)  
CMR+
- Built in Radio Performance (Subject to Country Licensing):  
Frequency Band: .....2.400GHz - 2.485GHz  
Modulation: .....Frequency Hopping Spread Spectrum  
Data Rate: .....9600bps default  
Transmit Power: .....1watt Max.  
Receiver Sensitivity: .....-105dBm  
Range @ Max. Power: .....10km Line of Sight (typical)  
Maximum EIRP: .....6dBW (Using high gain antenna)

