NCT-2000D™

All-In-View, high performance, ***dual-frequency GPS engine*** *yields real-time one-centimeter accuracy*

(ACTUAL SIZE)

NavCom's NCT-2000D™ is setting a new benchmark for GPS receiver technology including the use of WAAS. It provides a compact package and proven unparalleled performance through a combination of interference suppression, multipath mitigation, and measurement accuracy. Since the NCT-2000D™ uses both frequencies, not just L1, it is immune to ionospheric effects.

INNOVATIVE DESIGN

The NCT-2000D™ engine incorporates several patented innovations advancing the existing GPS technology to the next generation.
The receiver provides near-optimal P-code recovery, i.e. a more than 50% signal-to-noise ratio advantage over competing technologies such as Z-tracking®. The user greatly benefits since it improves real-time positioning with reliable centimeter-level accuracy under varying conditions.

The NCT-2000D™ has been independently tested and was proven to be the best receiver when facing various multipath environments.

APPLICATIONS

The NCT-2000D™ is uniquely suited for real-time applications in areas such as surveying, precision farming, precise positioning, and construction. It delivers the required millimeter measurement precision and fast update rates at low data latency. For example, static positioning using a commercially available post-processing software package yields position accuracy of 5 mm + 1ppm baseline length.

Its predecessor (without WAAS) is currently used by thousands of customers both in the agricultural and the survey markets.

The NCT-2000D™ provides the flexibility to configure it as a base (or reference) station or as a remote (or mobile) station. Both modes of operation are included in the standard configuration. It generates and accepts RTCM corrections (code & carrier) and RTK data. In remote mode it can provide RTK update rates up to 10 Hz. The user can choose to operate in the RTCM standard (compatible with any station conforming to the internationally recognized RTCM standard) or NavCom's proprietary, more efficient RTK format.

The receiver can also be used in static geodetic or network applications because it provides robust tracking of the L2 carrier and very low phase noise on L1 & L2 second to none in the industry.

CUSTOMER EVALUATION

NavCom offers a complete evaluation kit to enable potential clients to test the receiver's performance in their environment and under their peculiar test conditions.

The kit contains a NCT-2000D™ GPS receiver board, power supply, interface cables, antenna, manuals, and NavCom's Windows®-based evaluation software.

It allows command and control of the receiver, which enables the user to configure the interfaces and to choose operation modes as desired.

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NAVCOM

GPS OEM Products

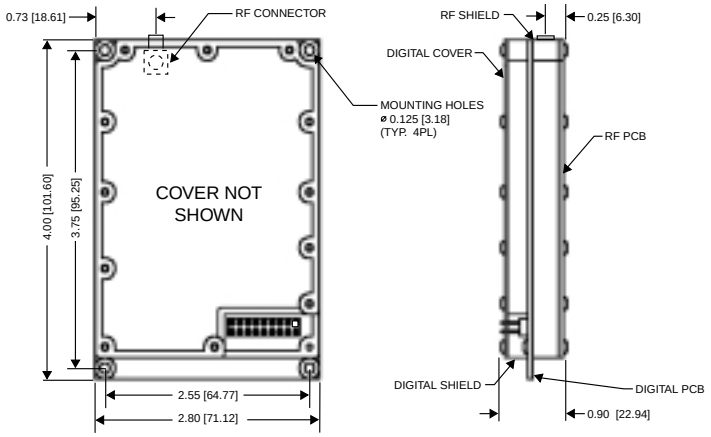
NCT-2000D™ *Technical Specifications*

FEATURES

- "All-in-view" tracking
- L1 & L2 full wavelength carrier tracking
- C/A, P1 & P2 code tracking
- User programmable output rates:
  - PVT @ 5 Hz, 2Hz, 1Hz, or slower
  - Raw data @ 10Hz, 5Hz, 2Hz, 1Hz, or slower
- Minimal data latency
- Flexible architecture will accommodate C/A on L2
- 2 separate WAAS channels
- Superior interference suppression (both in-band & out-of-band)
- Patented multipath rejection
- Supports RTCM v2.2 & NavCom's compact RTK binary format.
- Supports NMEA 0183 (e.g. GGA, GLL, VTG)
- Event Marker Input
- 1 PPS timing signal output
- Fast acquisition / re-acquisition
- Self survey mode (position averaging)
- Compact Physical Size

PHYSICAL/ENVIRONMENTAL

- Size: L x W x H:
  4.0 x 2.8 x 0.9 inches (102 x 71 x 23 mm)
- Weight: <0.3 lb.
- Power:
  Input Voltage: +5 VDC
  +/- 0.25V, 50mV p-p ripple
  Consumption: < 6 W
- Connectors:
  I/O Connector: 18-pin dual-row male header for:
  – DC power input
  – Back-up battery input for:
  Real-time clock, battery-backed RAM
  – External control outputs
  – Event input
  – Serial communication signals
  RF Connector:
  MCX jack with 5 VDC bias for active antenna
- Temperature (ambient):
  Operating: -40° C to +70° C
  Storage: -40° C to +85° C
- Humidity:
  85% non-condensing



PERFORMANCE

- Measurement Precision (1 sigma):
  Raw C/A code: 20 cm @ 42 dB-Hz
  Raw carrier phase noise: L1: 0.75 mm @ 42 dB-Hz
  L2: 0.95 mm @ 42 dB-Hz
- Real-time DGPS (code) Accuracy* (1-sigma):
  Position (H): 12 cm
  Position (V): 25 cm
  Velocity: 0.01 m/s
- Real-time RTK Accuracy**:
  Position (H): < 1cm + 1ppm
  Position (V): < 2 cm + 1ppm
- 1 PPS Resolution: 12.5ns
- Data Latency:
  PVT: < 20 ms at all nav rates
  Raw data: < 20 ms at all rates
- Time-to-first-fix:
  Cold Start: < 60sec (typical)
- Reacquisition:
  Brief Loss of Signal (less than 3 sec): << 1 second
- Dynamics:
  Acceleration: up to 6g
  Speed: < 515 m/s
  Altitude: < 60,000ft
  (Speed & altitude are restricted by export laws)

* Up to 200 km if using NCT 2000 receivers as base station and mobile

** Up to 10 km if using NCT 2000 receivers as base & rover

I/O CONNECTOR

Serial ports' output rate selectable from 300 bps to 230.4 kbps.

I/O Connector Assignments

Pin	Input/Output	Description
1	I/O	Serial Port Signal Return
2	I/O	Multi-Function: • RS-232 Serial Port 2 Input • Parallel Output 2
3	O	Multi-Function: • RS-232 Serial Port 2 Output • Parallel Output 1
4	I/O	Multi-Function: • RS-232 Serial Port 1 Input • Parallel Output 0
5	O	RS-232 Serial Port 1 Output
6	I/O	Serial Port Signal Return
7	I/O	Multi-Function: • TTL Serial Port 2 Input • Parallel Output 2
8	O	Multi-Function: • TTL Serial Port 2 Output • Parallel Output 1
9	I	External Backup Battery Input
10	I	DC Input Power
11	I/O	DC Power Return
12	O	Backup Battery Pull-up
13	I	Multi-Function: • TTL Event Latch Input (edge-triggered, software-programmable edge) • External Reset Input (active low)
14	O	TTL Time Mark Output (pulsed; width and period software-programmable)
15	I/O	Time Mark Return
16	O	TTL Serial Port 1 Output
17	I/O	Multi-Function: • TTL Serial Port 1 Input • Parallel Output 0
18	I/O	Serial Port Signal Return

Inputs and outputs specified above as RS-232 meet all of the electrical interface requirements of the EIA/TIA RS-232E (including ESD requirements) and CCITT V.28 specifications.