# PwrPak7D

## Compact dual-antenna enclosure delivers scalable positioning performance with internal storage

### Future-proofed scalability

Capable of tracking all present and upcoming Global Navigation Satellite System (GNSS) constellations and satellite signals, the PwrPak7D is a robust, high-precision receiver that is software upgradeable in the field to provide the custom performance required for your application.

### Dual-antenna input

Multi-frequency, dual-antenna input allows the PwrPak7D to harness the power of RTK and ALIGN functionality. This makes the PwrPak7D ideal for ground, marine, rail or aircraft-based systems, providing industry-leading GNSS multi-constellation heading and position data in static and dynamic environments.

### Enhanced connectivity

Compact and lightweight, the PwrPak7D is well suited for rover applications. It has a powerful OEM7 GNSS engine inside and offers built-in Wi-Fi, onboard NTRIP client and server support and 16 GB of internal storage. It also has enhanced connection options including serial, USB, CAN and Ethernet.

### Precise thinking makes it possible

Our GNSS products are developed for efficient and rapid integration and have set the standard in quality and performance for over 20 years. State-of-the-art lean manufacturing facilities in our North American headquarters produce the industry's most extensive line of OEM receivers, antennas and subsystems. Our products are backed by a team of highly-skilled design and customer support engineers ready to answer your integration questions.

### SPAN GNSS+INS technology

With SPAN GNSS+INS technology from Hexagon | NovAtel, the PwrPak7D can interface with supported IMUs to provide a superior position, velocity and attitude solution and bridge GNSS outages.

### Benefits

- Small, low-power GNSS enclosure
- Easy integration into space and weight constrained applications
- Rugged design ideal for challenging environments
- Enhanced connection options including serial, USB, CAN and Ethernet
- Future-proof for upcoming GNSS signal support

### Features

- TerraStar Correction Services supported over multi-channel L-Band and IP connections
- Spoofing detection, interference detection and mitigation provided by GNSS Resilience and Integrity Technology (GRIT)
- SPAN GNSS+INS capability with configurable application profiles
- Dual-antenna ALIGN heading
- Dedicated wheel sensor input
- 16 GB of internal storage
- Built-in Wi-Fi support
- Supports Precision Time Protocol (PTP)
- Hardware variants available without Wi-Fi or internal storage

## Performance[1]

### Signal tracking

#### Primary RF[2]

| | |
|---|---|
| GPS | L1 C/A, L1C, L2C, L2P, L5 |
| GLONASS[3] | L1 C/A, L2 C/A, L2P, L3, L5 |
| Galileo[4] | E1, E5 AltBOC, E5a, E5b |
| BeiDou | B1I, B1C, B2I, B2a, B2b |
| QZSS | L1 C/A, L1C, L1S, L2C, L5 |
| NavIC (IRNSS) | L5 |
| SBAS | L1, L5 |
| L-Band | up to 5 channels |

#### Secondary RF[2]

| | |
|---|---|
| GPS | L1 C/A, L1C, L2C, L2P, L5 |
| GLONASS[3] | L1 C/A, L2 C/A, L2P, L3, L5 |
| Galileo[4] | E1, E5 AltBOC, E5a, E5b |
| BeiDou | B1I, B1C, B2I, B2a, B2b |
| QZSS | L1 C/A, L1C, L1S, L2C, L5 |
| NavIC (IRNSS) | L5 |

### Horizontal position accuracy (RMS)

| | |
|---|---|
| Single point L1 | 1.5 m |
| Single point L1/L2 | 1.2 m |
| SBAS[5] | 60 cm |
| DGPS | 40 cm |
| TerraStar-L[6] | 40 cm |
| TerraStar-C PRO[6] | 2.5 cm |
| RTK | 1 cm + 1 ppm |

### ALIGN heading accuracy

| Baseline | Accuracy (RMS) |
|---|---|
| 2 m | 0.08° |
| 4 m | 0.05° |

### Maximum data rate

| | |
|---|---|
| Measurements | up to 100 Hz |
| Position | up to 100 Hz |

### Time to first fix[7]

| | |
|---|---|
| Cold start | < 34 s (typ) |
| Hot start | < 20 s (typ) |

### Signal reacquisition

| | |
|---|---|
| L1 | < 0.5 s (typ) |
| L2 | < 1.0 s (typ) |

**Time accuracy[8]** < 5 ns RMS

**Velocity accuracy** < 0.03 m/s RMS

**Velocity limit[9]** 600 m/s

## Physical and electrical

**Dimensions** 147 x 125 x 55 mm

**Weight** 500 g

### Power

| | |
|---|---|
| Input voltage | +9 to +36 VDC |
| Power consumption[10] | 3.95 W |

### 2 Antenna LNA power outputs

| | |
|---|---|
| Output voltage | 5 VDC ±5% |
| Maximum current | 200 mA |

### Connectors

| | |
|---|---|
| 2 Antenna | SMA |
| USB device | Micro A/B |
| USB host | Micro A/B |
| Serial, CAN, Event I/O | DSUB HD26 |
| Ethernet | RJ45 |
| Power | SAL M12, 5 pin, male |

### Communication ports

| | |
|---|---|
| 1 RS-232 | up to 460,800 bps |
| 2 RS-232/RS-422 selectable | up to 460,800 bps |
| 1 USB 2.0 (device) | HS |
| 1 USB 2.0 (host) | HS |
| 1 Ethernet | 10/100 Mbps |
| 1 CAN Bus | 1 Mbps |

1 Wi-Fi
3 Event inputs
3 Event outputs
1 Pulse Per Second (PPS) output
1 Quadrature wheel sensor input

### Status LEDs

Power, GNSS, INS, Data logging, USB

## Environmental

### Temperature

| | |
|---|---|
| Operating | -40°C to +75°C |
| Storage | -40°C to +85°C |

**Humidity** 95% non-condensing

**Ingress protection rating** IP67

### Vibration (operating)

| | |
|---|---|
| Random | MIL-STD-810H, Method 514.8 (Cat 24, 20 g RMS) |
| Sinusoidal | IEC 60068-2-6 |

**Acceleration (operating)** MIL-STD-810H, Method 513.8, Procedure II (16 g)

**Bump (operating)** IEC 60068-2-27 (25g)

**Shock (operating)** MIL-STD-810H, Method 516.8, Procedure 1, 40 g 11 ms terminal sawtooth)

## Compliance

FCC, ISED, CE and Global Type Approvals

## Features

- NovAtel OEM7 positioning engine
- Standard 16 GB internal storage
- Built-in Wi-Fi support
- Web GUI

## Included accessories

- Power cable
- USB cable
- DSUB HD26 to DB9 RS-232 cable

## Optional accessories

- Full breakout cable for DSUB HD26 connector
- DSUB HD26 to M12 IMU cable

1. *Typical values under ideal, open sky conditions.*
2. *Signal availability based on model configuration. See manual for details.*
3. *Hardware ready for L5.*
4. *E1bc support only.*
5. *GPS-only.*
6. *Requires a subscription to TerraStar correction service.*
7. *Cold start: no almanac or ephemerides and no approximate position or time. Hot start: almanac and recent ephemerides saved and approximate position and time entered..*
8. *Time accuracy does not include biases due to RF or antenna delay.*
9. *Export licensing restricts operation to a maximum of 600 m/s, message output impacted above 585 m/s.*
10. *Typical values using serial port communication without interference mitigation. See user manual for power supply considerations.*

# Contact Hexagon | NovAtel

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