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
Performance

**Signal tracking**
- **Primary RF**:
  - GPS: L1 C/A, L1C, L2C, L2P, L5
  - Galileo: E1, E5 AltBOC, E5a, E5b
  - QZSS: L1 C/A, L1C, L1S, L2C, L5
  - NavIC (IRNSS): L5
- **SBAS**: L1, L5
- **L-Band**: up to 5 channels

**Secondary RF**:
- GPS: L1 C/A, L1C, L2C, L2P, L5
- Galileo: E1, E5 AltBOC, E5a, E5b
- 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: 60 cm
- GPS: 40 cm
- TerraStar-L1: 40 cm
- TerraStar-C PRO: 2.5 cm
- RTK: 1 cm + 1 ppm
  - Initialization time < 10 s
  - Initialization reliability > 99.9%

**ALIGN heading accuracy**
- Baseline accuracy (RMS):
  - 2 m: 0.08 deg
  - 4 m: 0.05 deg
- **Maximum data rate**:
  - Measurements: up to 100 Hz
  - Position: up to 100 Hz
- **Time to first fix**:
  - Cold start: < 39 s (typ)
  - Hot start: < 20 s (typ)

**Signal reacquisition**
- L1: < 0.5 s (typ)
- L2: < 1.0 s (typ)

**Time accuracy**
- 20 ns RMS

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

**Velocity limit**
- 515 m/s

**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 (CAT5e)
- 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

**Physical and electrical**
- **Dimensions**: 147 x 125 x 55 mm
- **Weight**: 500 g
- **Power**:
  - Input voltage: > +9 to +36 VDC
  - Power consumption: 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
- Data logging: push button
- Power: SAL M12, 5-pin, male

**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 514.6, Procedure 1 (14 g, 11 ms rms terminal sawtooth)
- Shock (operating):
  - MIL-STD-810H, Method 516.6, Procedure 1
  - 10 g, 11 ms (typical)

**Compliance**
- FCC, CE, ISED, and Global Type Approvals

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

**Firmware solutions**
- ALIGN
- GNSS Resilience and Integrity Technology (GRIT)
- SPAN GNSS+INS technology
- RTK
- RTK ASSIST
- TerraStar Correction Services
- API

**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
- RJ45 Ethernet cable
- VEXXIS GNSS-500 and GNSS-800 series antennas
- Compact GNSS antennas
- GrafNav/GrafNet
- Inertial Explorer
- NovAtel Application Suite

**Hardware options**
- PwrPak7D-E1: integrated G320 IMU
- PwrPak7D-E2: integrated G370 IMU
- PwrPak7DM: no Wi-Fi, no 16 GB internal storage

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1. Typical values. Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference.
3. Hardware ready for L5. E1bc and E6bc support only.
4. GPS-only.
5. Requires a subscription to a TerraStar data service. Subscriptions available from NovAtel.
6. Typical value. No almanac or ephemerides and no approximate position or time.
7. Typical value. 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 500 meters per second, message output impacted above 500 m/s.
10. Export licensing restricts operation to a maximum of 500 meters per second, message output impacted above 500 m/s.
11. Typical values using serial port communication without interference mitigation. Consult the OEM User Documentation for power supply considerations.