

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

Performance¹

Signal tracking

Primary RF²

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 RF²

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 fix⁷

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

Signal reacquisition

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

Time accuracy⁸ < 5 ns RMS

Velocity accuracy < 0.03 m/s RMS

Velocity limit⁹ 600 m/s

Physical and electrical

Dimensions 147 x 125 x 55 mm

Weight 500 g

Power

Input voltage +9 to +36 VDC
Power consumption¹⁰ 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



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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.

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