

PwrPak7

Compact 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 PwrPak7 is a robust, high-precision receiver that is software upgradeable in the field to provide the custom performance required for your application.

Base station or rover

Compact and lightweight, the PwrPak7 is well suited for base or 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 were 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 PwrPak7 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
- 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

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS ²	L1 C/A, L2 C/A, L2P, L3, L5
Galileo ³	E1, E5 AltBOC, E5a, E5b, E6
BeiDou	B1I, B1C, B2I, B2a, B2b, B3I
QZSS	L1 C/A, L1C, L1S, L2C, L5, L6
NavIC (IRNSS)	L5
SBAS	L1, L5
L-Band	up to 5 channels

Horizontal position accuracy (RMS)

Single point L1	1.5 m
Single point L1/L2	1.2 m
SBAS ⁴	60 cm
DGPS	40 cm
TerraStar-L ⁵	40 cm
TerraStar-C PRO ⁵	2.5 cm
TerraStar-X ⁵	2 cm
RTK	1 cm + 1 ppm

Maximum data rate

Measurements	up to 100 Hz
Position	up to 100 Hz

Time to first fix⁶

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

Signal reacquisition

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

Time accuracy⁷

< 5 ns RMS

Velocity accuracy

< 0.03 m/s RMS

Velocity limit⁸

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 ⁹	3.25 W

Antenna LNA power output

Output voltage	5 VDC ±5%
Maximum current	200 mA

Connectors

Antenna	TNC
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 (25 g)

Shock (operating)

MIL-STD-810H,
Method 516.8, Procedure 1,
40 g 11 ms terminal sawtooth

Compliance

FCC, ISSED, 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. Hardware ready for L5.

3. E1bc and E6bc support only.

4. GPS-only.

5. Requires a subscription to TerraStar correction service.

6. 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.

7. Time accuracy does not include biases due to RF or antenna delay.

8. Export licensing restricts operation to a maximum of 600 m/s, message output impacted above 585 m/s.

9. Typical values using serial port communication without interference mitigation. See manual for power supply considerations.

Contact Hexagon | NovAtel

sales.nov.ap@hexagon.com 1-800-NOVATEL (U.S. and Canada) or 403-295-4900 | China: 0086-21-68882300 | Europe: 44-1993-848-736 | SE Asia and Australia: 61-400-883-601. For the most recent details of this product: novatel.com

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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
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Velocity accuracy	< 0.03 m/s RMS
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Velocity limit⁹	600 m/s
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Physical and electrical

Dimensions	147 x 125 x 55 mm
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Weight	500 g
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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
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Ingress protection rating	IP67
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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)
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Bump (operating)	IEC 60068-2-27 (25g)
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Shock (operating)	MIL-STD-810H, Method 516.8, Procedure 1, 40 g 11 ms terminal sawtooth
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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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