COMPACT OEM7® ENCLOSURE DELIVERS NOVATEL’S LEADING SPAN® GNSS+INS TECHNOLOGY

SPAN: WORLD LEADING GNSS+INS TECHNOLOGY
Synchronous Position, Attitude and Navigation (SPAN) technology brings together two different but complementary technologies: Global Navigation Satellite System (GNSS) positioning and inertial navigation. The absolute accuracy of GNSS positioning and the stability of Inertial Measurement Unit (IMU) gyro and accelerometer measurements are tightly coupled to provide an exceptional 3D navigation solution that is stable and continuously available, even through periods when satellite signals are blocked.

SPAN ENABLED MEMS RECEIVER
The PwrPak7-E1 contains an Epson G320N MEMS IMU to deliver world class NovAtel SPAN technology in an integrated, single box solution. This product is commercially exportable and provides an excellent price/performance/size GNSS+INS solution.

FUTURE PROOFED SCALABILITY
Capable of tracking all present and upcoming GNSS constellations and satellite signals, the PwrPak7-E1 is a robust, high precision receiver that is software upgradable in the field to provide the custom performance required for your application demands. The PwrPak7-E1 has a powerful OEM7 GNSS engine, integrated MEMS IMU, built in Wi-Fi, on board 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
Developed for efficient and rapid integration, our GNSS products 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. All of our products are backed by a team of highly skilled design and customer support engineers, ready to answer your integration questions.
PERFORMANCE

Channel Configuration
555 Channels

Signal Tracking
GPS  L1 C/A, L1C, L2C, L2P, L5
GLONASS  L1 C/A, L2C, L2P,

Galileo  L1, L5
BeiDou  B1, B1C, B2, B2a, B3I
QZSS  L1 C/A, L1C, L2C, L5, L6

NavIC (IRNSS)  L5
SBAS  L1, L5
L-Band  up to 5 channels

GNSS Horizontal Position Accuracy (RMS)
Single point L1  1.5 m
Single point L1/L2  1.2 m
SBAS  60 cm
DGPS  40 cm
TerraStar- L  40 cm
TerraStar-C PRO  2.5 cm

RTK  1 cm + 1 ppm
Initialization time  <10 s
Initialization reliability  >99.9%

Maximum Data Rate
GNSS Measurements  up to 20 Hz
GNSS Position  up to 20 Hz
INS Position/Attitude  up to 200 Hz
IMU Raw Data Rate  125 Hz

Time to First Fix
Cold start  <39 s
Hot start  <20 s

Time Accuracy  20 ns RMS
Velocity Limit  515 m/s

IMU PERFORMANCE

Gyroscope Performance
Input range  ±150 deg/s
Rate bias stability  3.5 deg/hr
Angular random walk  0.1 deg/vhr

Accelerometer Performance
Range  ±5 g
Bias stability  0.1 mg
Velocity random walk  0.05 m/s/vhr

COMMUNICATION PORTS
1 RS-232  up to 460,800 bps
2 RS-232/RS-422 selectable  up to 460,800 bps
 USB 2.0 (device)  H5
 USB 2.0 (host)  H5
 Ethernet  10/100 Mbps
 CAN Bus  1 Mbps

Wi-Fi  802.11 b/g/n
3 Event inputs
3 Event outputs
1 Pulse Per Second output
1 Quadrature Wheel Sensor input

PHYSICAL AND ELECTRICAL

Dimensions  147 x 125 x 55 mm
Weight  510 g

Power
Input voltage  +9 to +36 VDC
Power consumption  3.4 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

Ethernet  RJ45
Data Logging  Push button
Power  S AND 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

Waterproof
IEC 60529 IPX7

Vibration (operating)
Random  MIL-STD-810G(CH1)
Method 514.7
Category 24, 20g RMS

Sinusoidal  IEC 60068-2-6
Method 516.7

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OPTIONAL ACCESSORIES

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

INCLUDED 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 Connect

For the most recent details of this product:
www.novatel.com/products/gnss-receivers/enclosures/pwrpak7-E1

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61–400–883–601

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 sources.
2 Hardware ready for L3 and L5.
3 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 Expert licensing restricts operation to a maximum of 515 metres per second, message output impacted above 500 m/s.
10 Supplied by IMU manufacturer.
11 Typical value. Consult the OEM7 User Documentation for power supply considerations.
12 GNSS only. IMU measurements may not be valid.
13 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 sources.
14 1 ppm should be added to all position values to account for additional error due to baseline length.
15 Post-processing results using Inertial Explorer software. The survey data used to generate these statistics had frequent changes in azimuth.