OEM729

Multi-frequency, backward compatible GNSS receiver supports all modern signals

High-precision GNSS, backward compatible
The multi-frequency OEM729 offers future-ready precise positioning. Advanced interference mitigation features maintain high performance in challenging environments. The OEM729 provides the most efficient way to bring powerful Global Navigation Satellite System (GNSS) capable products to market quickly. It is form factor and pin-compatible with the previous generation OEM628 receiver from Hexagon | NovAtel. With centimetre-level positioning utilising TerraStar satellite-delivered correction services, the OEM729 ensures globally available, high-performance positioning without the need for expensive network infrastructure. Anywhere. Anytime.

Built-in flexibility
The OEM729 can be configured in multiple ways for maximum flexibility. OEM7 firmware from NovAtel allows users to configure the OEM729 for their unique application needs. The OEM729 is scalable to offer sub-metre to centimetre-level positioning and is field upgradeable to all OEM7 family software options. These options include ALIGN for precise heading and relative positioning, GLIDE for decimetre-level pass-to-pass accuracy, SPAN GNSS+INS technology for continuous 3D position, velocity and attitude, and GNSS Resilience and Integrity Technology (GRIT) for advanced positioning protection. RTK delivers centimetre-level real-time positioning, or it can go base-free for centimetre and decimetre PPP solutions using TerraStar corrections.

To learn more about how our firmware solutions can enhance your positioning, visit novatel.com/products/firmware-options-pc-software/gnss-receiver-firmware-options.

Designed with the future in mind
The OEM729 can track all current and upcoming GNSS constellations including GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC. It is software upgradeable to track modernised signals as they become available.

Features
- High position availability with multi-constellation, multi-frequency tracking and high data rate
- TerraStar Correction Services supported over multi-channel L-Band and IP connections
- Serial, USB, CAN and Ethernet connectivity with web interface
- Spoofing detection, interference detection and mitigation provided by GRIT
- RTK, GLIDE and STEADYLINE firmware options
- Simple to integrate, industry common form factor with 20 g vibration performance rating
- Compatible with existing OEM628 integrations
- Supports external oscillator input
- SPAN GNSS+INS technology integration bridges 3D positioning through GNSS outages in difficult environments
**Performance**

### Signal tracking
- QZSS L1/C, L1C, L1S, L2/C, 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**: 60 cm
- **DGPS**: 40 cm
- **TerraStar-L**: 40 cm
- **TerraStar-C PRO**: 2.5 cm
- **TerraStar-X**: 2 cm
- **RTK**: 1 cm + 1 ppm

### 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

### Physical and electrical
- **Dimensions**: 60 x 100 x 9 mm
- **Weight**: 48 g
- **Power**: Input voltage: 3.3 VDC ±5%
- **Power consumption**
  - **GPS L1**: 0.9 W (typ)
  - **GPS/GLONASS L1/L2**: 1.3 W (typ)
  - All frequencies/All constellations: 1.8 W (typ)
- **Antenna port power output**
  - Output voltage: 5 VDC ±5%
  - Maximum current: 200 mA
- **Connectors**
  - Main: 24-pin dual row male header
  - Antenna input: MMCX female
  - Aux: 16-pin dual row male header
  - External oscillator input: MMCX female
- **Communication ports**
  - 1 RS232/RS422 up to 460,800 bps
  - 2 LVCMOS serial up to 460,800 bps
  - 2 CAN Bus 1 Mbps
  - 1 USB 2.0 (device) 10 Mbps
  - 1 Ethernet 10/100 Mbps

### Environmental
- **Temperature**
  - Operating: -40°C to +85°C
  - Storage: -55°C to +95°C
- **Humidity**
  - 95% non-condensing
- **Vibration**
  - Random: MIL-STD-810G(CH1), Method S14.7 (Cat 24, 20 g RMS)
  - Sinusoidal: IEC 60068-2-6
- **Bump**
  - ISO 9022-31-06 (25 g)
- **Shock**
  - Operating: MIL-STD-810G(CH1), Method S16.7 (75 g)-Survival
  - Non-operating: MIL-STD-810G(CH1), Method S16.7 (75 g)-Survival
- **Acceleration**
  - Operating: MIL-STD-810G(CH1), Method S13.7 (16 g)
  - Non-operating: MIL-STD-810G(CH1), Method S13.7 (16 g)

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

### Features
- Field upgradeable software
- Differential GNSS positioning
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, 3.2, 3.3, 3.4, CMR, CMR+, RTCA and NOVATELX
- Navigation output support for NMEA 0183 and detailed NovAtel ASCII and binary logs
- Receiver Autonomous Integrity Monitoring (RAIM)
- GLIDE and STEADYLINE smoothing algorithms
- Web GUI
- Outputs to drive external LEDs
- 2 Event inputs
- 1 Event output
- Pulse Per Second (PPS) output
- External oscillator input

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

### Optional accessories
- **VEXXIS GNSS-500 and GNSS-800 series antennas**
- **Compact GNSS antennas**
- **OEM7 Development Kit**
- **NovAtel Application Suite**

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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.
2. Hardware ready for L5. E1bc and E6bc support only.
3. Requires a subscription to a TerraStar data service. Subscriptions available from NovAtel.
4. Typical values using serial port communication without interference mitigation. Consult the OEM7 User Documentation for power supply considerations.
5. Device or Host. Device by default.