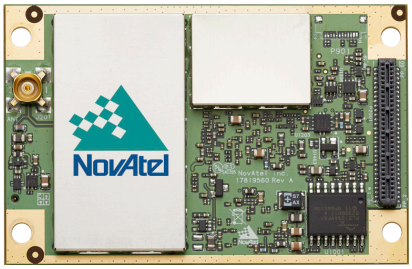
OEM7700

Multi-frequency, GNSS receiver delivers robust positioning and simplifies integration



High-precision GNSS

The multi-frequency OEM7700 offers future-ready precise positioning for space-constrained applications. Advanced interference mitigation features maintain high performance in challenging environments. With a variety of interface options to facilitate system integration, the OEM7700 provides the most efficient way to bring powerful Global Navigation Satellite System (GNSS) capable products to market quickly. With centimetre-level positioning utilising TerraStar satellite-delivered correction services, the OEM7700 ensures globally available, high-performance positioning without the need for expensive network infrastructure. Anywhere. Anytime.

Built-in flexibility

The OEM7700 can be configured in multiple ways for maximum flexibility. OEM7 firmware from Hexagon | NovAtel provides users with the ability to configure the OEM7700 for their unique application needs. The OEM7700 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 OEM7700 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
- Supports Galileo High Accuracy Service (HAS)
- Serial, USB, CAN and Ethernet connectivity with web interface
- Spoofing detection, interference detection and mitigation provided by GRIT
- RTK, ALIGN, GLIDE, and STEADYLINE firmware options
- SPAN GNSS+INS technology integration bridges 3D positioning through GNSS outages in difficult environments
- Simple to integrate, small form factor with 20 g vibration performance rating
- Supports Precision Time Protocol (PTP) and generalised Precision Time Protocol (gPTP)

Performance[1]

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, L1 C/B, 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 fix[6]

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

Signal reacquisition

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

Time accuracy[7] < 5 ns RMS

Velocity accuracy < 0.03 m/s RMS

Velocity limit[8] 600 m/s

Physical and electrical

Dimensions 46 x 71 x 8 mm

Weight 31 g

Input voltage 3.3 VDC ±5%

Power consumption[9]

GPS L1	0.9 W (typ)
GPS/GLONASS L1/L2	1.3 W (typ)
All frequencies/All constellations with L-Band	1.8 W (typ)

Antenna port power output

Output voltage	5 VDC ±5%
Maximum current	200 mA

Connectors

Main	60-pin dual row female socket
Antenna Input	MMBX female

Communication ports

5 LVCMOS serial	up to 460,800 bps
2 CAN Bus	1 Mbps
1 USB 2.0 (device)	HS
1 USB 2.0 (host)	HS
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[10]	MIL-STD-810G (CH1), Method 514.7 (Cat 24, 20 g RMS)
Sinusoidal	IEC 60068-2-6

Bump ISO 9022-31-06 (25 g)

Shock

Operating	MIL-STD-810G (CH1), Method 516.7 (40 g)
Non-operating	MIL-STD-810G (CH1), Method 516.7 (75 g)-Survival

Acceleration

Operating	MIL-STD-810G (CH1), Method 513.7 (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, 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
- 4 Event inputs
- 4 Event outputs
- Pulse Per Second (PPS) output

Optional accessories

- Mechanical mounting rails
- OEM7 Development Kit

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. Consult the OEM7 User Documentation for power supply considerations.*
10. *Requires mechanical mounting rails to meet 20g; 7.7 g without rails.*

Contact Hexagon | NovAtel

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For the most recent details of this product: novatel.com

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