Receivers 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 utilizing 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 uses a 555 channel architecture and can be configured in multiple ways for maximum flexibility. NovAtel's OEM7® firmware 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 upgradable to all OEM7 family software options. These options include ALIGN® for precise heading and relative positioning, GLIDE® for decimetre level pass-to-pass accuracy and SPAN® GNSS+INS for continuous 3D position, velocity and attitude. NovAtel CORRECT™ with RTK delivers centimetre level real-time positioning, or go base-free for centimetre and decimetre PPP solutions using TerraStar corrections.

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

DESIGNED WITH THE FUTURE IN MIND

The OEM7700 is capable of tracking all current and upcoming GNSS constellations including GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC. It is software upgradable to track upcoming signals as they become available.
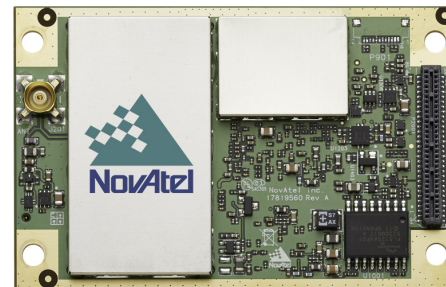
FEATURES

+ 555 channel, all–constellation, multi–frequency positioning solution

+ Multi–channel L–Band supports TerraStar correction services

+ Serial, USB, CAN and Ethernet connectivity with Web interface

+ Advanced interference visualization and mitigation features

+ RTK, GLIDE and STEADYLINE® firmware options

+ Simple to integrate, small form factor with 20 g vibration performance rating

+ SPAN GNSS+INS functionality

If you require more information about our receivers, visit novatel.com/oem7

PART OF HEXAGON

OEM7700

PERFORMANCE[1]

Channel Count
555 Channels

Signal Tracking
GPS   L1 C/A, L1C, L2C, L2P, L5
GLONASS[2] L1 C/A, L2 C/A, L2P, L3, L5
BeiDou[3]   B1, B2, B3
Galileo[4]   E1, E5 AltBOC, E5a, E5b, E6
NavIC (IRNSS)   L5
SBAS   L1, L5
QZSS   L1 C/A, L1C, L2C, L5, L6
L–Band   up to 5 channels

Horizontal Position Accuracy (RMS)
Single Point L1   1.5 m
Single Point L1/L2   1.2 m
NovAtel CORRECT
» SBAS[5]   60 cm
» DGPS   40 cm
» PPP[6]
    TerraStar-L   40 cm
    TerraStar-C   4 cm
» RTK   1 cm + 1 ppm
    Initialization time   < 10 s
    Initialization reliability > 99.9%

Maximum Data Rate
Measurements   up to 100 Hz
Position   up to 100 Hz

Time to First Fix
Cold start[7, 13]   < 40 s (typical)
Hot start[8, 13]   < 19 s (typical)

Signal Reacquisition
L1   < 0.5 s (typical)
L2   < 1.0 s (typical)

Time Accuracy[9]   20 ns RMS

Velocity Accuracy
                < 0.03 m/s RMS

Velocity Limit[10]   515 m/s

PHYSICAL AND ELECTRICAL

Dimensions   46 × 71 × 8 mm

Weight   31 g

Power
Input voltage   +3.3 VDC ±5%

Power Consumption[11]
GPS L1   0.9 W (typical)
GPS/GLONASS L1/L2
                   1.3 W (typical)
All frequencies/All constellations
with L-Band   1.8 W (typical)

Antenna Port Power Output
Output voltage   5.0 VDC ±5%
Maximum current   200 mA

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

COMMUNICATION PORTS

5 LVCMOS   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[12]   MIL-STD-810G
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 (40 g)
Non-operating   MIL-STD-810G,
    Method 516.7 (75 g)-Survival

Acceleration
Operating   MIL-STD 810G,
        Method 513.7 (16 g)

FEATURES

- Field upgradeable software
- Differential GPS 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
- Interference Toolkit
- Web GUI
- Outputs to drive external LEDs
- 4 Event inputs
- 4 Event outputs
- Pulse Per Second (PPS) output

FIRMWARE SOLUTIONS

- ALIGN
- SPAN
- RTK
- RTK ASSIST™
- TerraStar PPP
- API[13]

OPTIONAL ACCESSORIES

- VEXXIS® GNSS–500 and GNSS–800 series antennas
- ANT series antennas
- Mechanical mounting rails
- OEM7 Development Kit

For the most recent details of this product: novatel.com/oem7

novatel.com

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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 sources.
2   Hardware ready for L3 and L5.
3   Designed for BeiDou Phase 2 and 3, B1 and B2 compatibility. B3 conditionally supported and subject to change.
4   E1bc support only. Hardware ready for E6bc.
5   GPS only.
6   Requires subscription to TerraStar data service. Subscriptions available from NovAtel.
7   Typical value. No almanac or ephemerides and no approximate position or time.
8   Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
9   Time accuracy does not include biases due to RF or antenna delay.
10 Export licensing restricts operation to a maximum of 515 metres per second, message output impacted above 500 m/s.
11 Typical values using serial port communication without interference mitigation and Ethernet disabled. Consult the OEM7 User Documentation for power supply considerations.
12 Requires mechanical mounting rails to meet 20 g; meets 7.7 g without rails.
13 Available in Q1 2018