Altus APS3G

A complete surveying solution

The Altus APS3G is a flexible, reliable and high precision GNSS receiver ideal for any survey job. With an integrated UHF radio and the latest GNSS technology, the Altus APS3G guarantees superior accuracy and performance, long battery life and flexibility on site whatever the environment.

Key Features

- **544 channels for all-in-view signal tracking**
- **Robust RTK position accuracy and L-band support**
- **Best-in-class radio interference mitigation technology**
- **Latest UHF radio technology when the local communications infrastructure is limited**
- **Longest battery life on the market, delivering 12-14 hours of functionality**
- **All-in-one base and rover functionality**

Intelligent, Robust and Accurate

Designed for ease of handling and operation, the Altus APS3G delivers more than one day of functionality on a single battery charge thanks to its high power efficiency. The front panel LEDs show at a glance, receiver operation and status.

The Altus APS3G will boost productivity on any survey project. Robust mobile-phone technology provides a hassle-free, real-time network connection on demand while the latest UHF radio enables users to work in areas with poor mobile network coverage.

Outstanding performance

With Septentrio's latest RTK engine, the Altus APS3G calculates an accurate and reliable position every time. cm-level RTK position accuracy is guaranteed over extended distances and even during periods of elevated ionospheric activity thanks to Septentrio's IONO+ technology. The Altus APS3G's advanced interference mitigation technology (AIM+) offers the best resilience against unintentional and intentional radio interference on the market today.

Flexible and Open Technology

Septentrio's open technology means that the Altus APS3G is fully compatible with the most common third-party hardware and software solutions thus maximising the use of existing equipment and driving down the cost of ownership. The Altus APS3G is easily adaptable from a data collector via Bluetooth for both Base and Rover operation.

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FEATURES

GNSS Technology

544 hardware channels for simultaneous tracking of all visible satellite signals

Supported signals:

- GPS: L1, L2, L5
- GLONASS: L1, L2, L3
- Galileo[1,2]: E1BC, E5a, E5b, AltBoc, E6
- BeiDou[1]: B1, B2, B3
- QZSS: L1, L2, L5, L6
- IRNSS[1]: L5
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)

DGNSS and RTK (base and rover)[1]

Integrated L-band receiver[1]

TerraStar correction services

Septentrio's GNSS+ patented technologies:

- AIM+ unique anti-jamming and monitoring system against narrow and wideband interference
- IONO+ advanced scintillation mitigation
- APME+ a posteriori multipath estimator for code and phase multipath mitigation
- RAIM (Receiver Autonomous Integrity Monitoring)
- LOCK+ superior tracking robustness under heavy mechanical shocks or vibrations

Connectivity

Integrated Quad-Band Cellular Modem (EDGE, 2G, 3G, 3.5G) - 850/900/1800/1900 MHz

UHF transceiver, 406-470 MHz

NTRIP (v1 and v2) client, server and caster

Dynamic DNS and remote access to receiver

Direct IP and Data call (CSD) calling and accepting mode

Integrated Bluetooth (Class 2)

5-pin Lemo connector:
- Serial communication (Controller/PC)

8-pin Lemo connector:
- Serial communication for external radio

Data formats and Storage

Removable memory support: SD (up to 32 GB)

NMEA 0183 v2.3, v3.01 and v4.0 output

Septentrio Binary Format (SBF) fully documented with sample parsing tools

Corrections input and output:
- RTCM v2.x and 3.x (MSM included)
- CMR v2.0 and CMR+ (CMR+ input only)

MODELS

Altus APS3G: RTK Rover and Base functionality

Altus APS3G-X: Altus APS3G with additional external GNSS antenna connector

Altus APS3G-g: variant with external GSM antenna for enhanced signal reception

PERFORMANCE

Position Accuracy [3,4,6]

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.7 m
TerraStar-D[5]	6 cm	9 cm
TerraStar-C[5]	4 cm	6 cm

RTK Performance[3,4,6,7]

Horizontal accuracy	0.6 cm + 0.5 ppm
Vertical accuracy	1 cm + 1 ppm

Velocity accuracy[3]

0.03 m/s

Static and rapid static

Horizontal	3 mm + 0.5 ppm
Vertical	5 mm + 0.5 ppm

Static high precision[8]

Horizontal	3 mm + 0.1 ppm
Vertical	3.5 mm + 0.4 ppm

Maximum Update Rate[1,9]

Position (RTK)	25 Hz
Measurements	25 Hz

Time to first fix

Time to RTK fix[10]	avg. 7 s
Cold start[11]	< 45 s
Warm start[12]	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

STANDARD SYSTEM COMPONENTS

Altus APS3G

2 x Lithium-Ion Batteries
1 x LEMO 4-pin Power Cable
1 x LEMO 5-pin to Female DB9 Serial Controller Cable
1 x 2 GB SD Card
1 x APS3G Battery Charger with AC Adapter Power Supply
2 x UHF radio antennas (406-430 MHz & 440-470 MHz)

PHYSICAL AND ENVIRONMENTAL

Size	178 x 89.7 mm (7.0 x 3.5 in)
Weight[13]	1.16 kg (2.5 lb)
Internal battery	2 x 7.4V, 5000 mAh (Li-ion)
Battery life time[14]	12-14 hours
Current drain	1.0 to 1.5 A (peak 2.75 A)
External power input[15]	10–30 V DC
Power consumption	4 W Typical
Operating temperature[16]	-20 °C to +65 °C (-4°F to 149°F)
Storage temperature	-40 °C to +75 °C (-40°F to 167°F)
Shock/drop	2 m (6.6 ft)
Certification	CE, FCC Class B Part 47
Waterproofing	IP67

COMPATIBLE SOFTWARE

- Septentrio FieldGenius Collection Software
- Full support for Carlson SurvCE
- Support for a large variety of controllers, survey and GIS collection software applications and post-processing solutions
- Mobile PinPoint-GIS App for basic data collection[1], easy monitoring and control allowing overriding location of Android GNSS applications
- RxTools including APS3G Tools for easy data analysis, monitoring and advanced control

[1] Optional feature
[2] Galileo E6, BeiDou B3 and QZSS L6 tracking possible with Altus APS3G-X model
[3] 1-25 Hz measurement rate
[4] Performance depends on environmental conditions
[5] Requires service activation from TerraStar
[6] 1σ level
[7] RTK Fixed ambiguities
[8] Long occupations and precise ephemeris
[9] Standard rate 20 Hz (25 Hz optional for PVT over Bluetooth and measurements logged internally)
[10] Baseline: <20 km
[11] No information available (no almanacs, no approximate position)
[12] Ephemeris and approximate position known
[13] 1.36 kg (2.9 lbs) with internal batteries
[14] Depends on environmental configuration and factors
[15] Power can be provided via Lemo connector with dedicated cable
[16] At temperatures lower than -20 °C (-4 °F) external battery may be needed.

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