

WAAS GUS-Type 1 Receiver



Features

Narrow Correlator® technology on the L1 signal and digital pulse blanking on L2 and L5

Three independent receiver sections

Signal Quality Monitoring (SQM) measurements

Benefits

Ensures reliable tracking performance, even near sources of multipath and in-band interference

Provides flexibility by supporting multiple receiver configurations operating side by side

Offers the ability to monitor signal quality and detect satellite failures over the full ICAO threat space

NovAtel's WAAS GUS - Type 1 Receiver provides multiple independent receiver sections and unsurpassed signal tracking to ensure reliable and accurate control of uplink signal generation in Satellite-Based Augmentation Systems.

Exceptional tracking performance

The GUS Receiver provides superior tracking of L1 and L5 geostationary satellite signals, as well as L1 and L2 GPS signal tracking, which aids in precise system timing. NovAtel's Narrow Correlator® technology is included to enhance the reception of satellite data for highly accurate range measurements. Tracking reliability is also increased with the patent-pending SafeTrak™ technology to detect and eliminate cross-correlation.

Independent receiver sections

For flexible operation and configuration, the GUS Receiver features three independent receiver sections, each with its own dedicated antenna inputs. Each receiver section includes a primary Euro-3M card for L1 and L2 GPS tracking and a secondary Euro-L5 card, which provides L5 GEO signal tracking (see *Figure 1* on back). Each section is configured independently through standard RS-232 serial ports. A simple but comprehensive command interface provides tight control of each receiver section.

Advanced technologies

For improved reliability and integrity, the GUS Receiver offers NovAtel's latest advancements. This includes Signal Quality Monitoring (SQM) measurements, which allow users to monitor the quality of the incoming signal and detect satellite failures over the full ICAO threat space. In addition, digital pulse blanking on the L2 and L5 signals mitigates in-band interference from radars and pulsed DMEs.



Precise thinking

WAAS GUS -Type 1 Receiver

Performance¹

Frequency

L1	(1575.42 MHz)
L2	(1227.6 MHz)
L5	(1176.45 MHz)

Codes Tracked

- GPS L1 C/A code and L2 P(Y) code for GPS SVN (PRN 0-37)
- SBAS L1 C/A code, L2 C/A code, and L5 for GEO SVN (PRN 120-138)

Satellite Tracking Channels

- Up to 14 GPS L1 C/A and L2 P(Y)
- Up to 8 SBAS L1 C/A, L2 C/A, and L5 C5

Pseudorange Measurement Accuracy

GPS L1 C/A Code	10 cm RMS, C/N ₀ > 44 dB-Hz, DLL BW = 0.05 Hz
GPS L2 P(Y) Code	50 cm RMS, C/N ₀ > 38 dB-Hz, DLL BW = 0.05 Hz
SBAS L5 C5 Code	1 m RMS, C/N ₀ > 44 dB-Hz, DLL BW = 0.05 Hz

Single Channel Phase Accuracy

GPS L1 C/A Code	3 mm RMS, C/N ₀ > 44 dB-Hz, PLL BW = 3 Hz
GPS L2 P(Y) Code	5 mm RMS, C/N ₀ > 30 dB-Hz, PLL BW = 0.2 Hz
SBAS L5 C5 Code	3 mm RMS, C/N ₀ > 44 dB-Hz, PLL BW = 3 Hz

Data Rate

Raw Measurements	1 Hz
SQM Measurements	1 Hz
Status Data	1 Hz

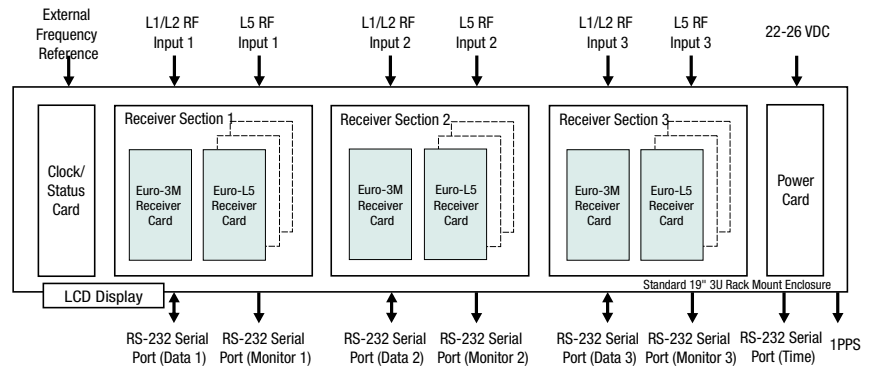
Time to First Fix² **100 s (95%)**

Signal Reacquisition

GPS L1	5 s (typical)
GPS L2	20 s (typical)
SBAS L1, L2, L5	10 s (typical)

MTBF³ **37,689 hr**

Altitude⁴ **3,000 m**



Physical & Electrical

Size (H x W x D) **17.7 x 44.9 x 37.5 cm**
(without mounting brackets)

Weight **9.8 kg**

Power

Input Voltage	+22 to +26 VDC
Power Consumption	31 W (typical)

External Oscillator Input

Input Frequency	10 MHz ± 5 ppm
Signal Level	0 to +17 dBm

Communication Ports

- 3 RS-232 bi-directional serial ports capable of up to 230,400 bps (Data ports)
- 1 RS-232 output port for 1PPS timing data, capable of up to 230,400 bps (Time port)
- 3 RS-232 output ports for data monitoring, capable of up to 230,400 bps (Monitor ports)

Input/Output Connectors

Power Input	3-position chassis jack
Antenna Input	6 x TNC female
External Oscillator Input	BNC female
1PPS Output	BNC female
COM1 (Data port)	3 x DB-9 male
COM2 (Time port)	DB-9 male
COM3 (Monitor port)	3 x DB-9 male

Environmental

Temperature	
Operating	-25°C to +55°C
Storage	-40°C to +85°C
Humidity	10% to 80%

Additional Features

- Includes RFI tracking improvements developed for the US WAAS network
- Patent-pending SafeTrak cross-correlation detection algorithm
- Digital pulse blanking on the L2 and L5 signals for mitigation against interference from radars and pulsed DMEs
- Standard 19" 3U rack mount enclosure
- Adjustable LCD display to provide continuous status information
- RS-232 serial ports
- Wide range of flexible controls and configurable outputs for maximum access to satellite data
- Built-in forced-air cooling

- 1 Typical values. Performance specifications subject to GPS system characteristics, US DOD operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.
- 2 With stabilized internal and external oscillators and initial time, almanac, and position.
- 3 Per MIL-HDBK-217F Notice 2 at +35°C external ambient temperature.
- 4 May operate above 3,000 m in a controlled environment, however is not qualified as such. Export licensing restricts operation to a maximum of 18,288 meters.



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