

# Miniature PLGR Engine-SAASM (MPE™-S) Type II GPS receiver

## Smaller and lighter – all the functionality

Full compliance with GB-GRAM Type II

Today's warfighters must be prepared to find their way in unfamiliar environments. Enhanced situational awareness allows them to adapt more quickly than the enemy. BAE Systems' proven U.S. Army Standard Embedded Receiver, Ground Based GPS Receiver Application Module (GB-GRAM) family of products facilitates surface mobility, augmenting alertness and preparedness.

Smaller and lighter weight than its predecessor version, MPE™-S, yet retaining all functionality, BAE Systems' Miniature PLGR Engine-SAASM (MPE-S) Type II delivers geolocation and precise positioning capabilities for military navigation, tactical communications, battlefield computing, and other Command, Control, Computers, Communication, and Information (C4I) equipment.

At its core, the MPE-S contains the Selective Availability Anti-Spoofing Module (SAASM). SAASM encapsulates all classified data and signal processing into one tamper-proof module, increasing the security of the MPE-S.



### Key features and benefits

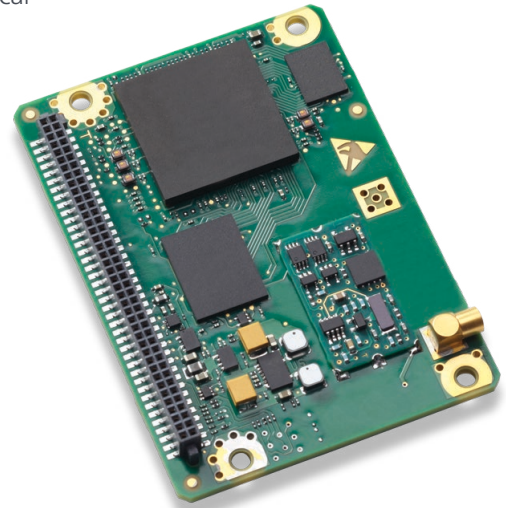
- Small serial interface (SSI) GB-GRAM Type II compliant
- SAASM security
- Field reprogrammability of the receiver application software
- 12-channel continuous satellite tracking for true All-In-View operation
- Simultaneous L1 and L2 dual frequency GPS signal reception
- Aggressive acquisition/reacquisition strategies to improve performance and reduce power consumption
- Cold start without time, position or almanac in less than 110 seconds from complete off
- Extended requirements in a jamming environment
  - 54 dB while tracking
  - 41 dB Direct Y acquisition
- Area navigation with waypoint storage
- User setup of units, datums and coordinate formats
- Mature, proven GPS technology
- Cryptographic key retention when not powered
- SPS and M-Code on product roadmap
- 24 channel pseudorange, delta range and carrier phase (option)

## Backward compatible

The Type II version of the BAE Systems MPE-S is backward compatible for current users of the MPE embedded GPS receiver. The familiar 80-pin I/O connector and robust MMCX RF connector will be easily recognizable for current users. The signal pin-out of the I/O connector is identical with the Type I version of the MPE-S. While the physical size has been reduced to 2.45 by 1.76 by 0.285 inches, the connector location remains the same relative to the edge of the board. This allows for economical upgrade to an embedded SAASM-based receiver.

## Dual-frequency RF

An advanced dual-frequency RF front end enables continuous track of both L1 and L2 GPS satellite frequencies. Even when turned off, a precision accuracy, low power time source runs continuously to enable rapid acquisition of the GPS satellites when the receiver is turned on. All this capability requires only a single 3-volt power source.



# Mature, **proven** GPS technology

## System characteristics

<b>Dynamics</b>	Velocity: 1,200 m/sec maximum* Acceleration: 9 g maximum
<b>Time accuracy</b>	100 nanoseconds
<b>Position accuracy</b>	SDGPS: <2 meters CEP* WAGE: <4 meters CEP* PPS: <12 meters CEP*
<b>Acquisition time</b>	TTFB <10 sec hot start, (prob >95%) <85 sec warm start (C/A handover) TTTF <18 sec, probability >95% (Stby <15 min) TTTF <25 sec (Stby <60 min) TTTF <70 sec (Direct-Y warm start) (Off <60 min)
<b>Velocity accuracy</b>	0.04 m/sec steady rate (3D 95%)
<b>Coordinate system</b>	28 predefined
<b>Datums</b>	233 predefined, 6 user-defined
<b>Storage capacity</b>	999 waypoints, 15 reversible routes

## Interfaces

### Connectors

- Power and data (SAMTEC P/N SFM-140-L2-S-D-LC)
- RF Input (Huber Suhner P/N 85MMCX-50-0-1/III)

### Hardware interfaces

- Three independent serial data ports (full duplex)
- Two low-power CMOS serial data ports
- One standard RS-232 serial data port
- IS-GPS-153
- NMEA-0183 data output
- 1PPS input
- Three independent 1PPS/10PPS configurable outputs
- L1/L2 active RF antenna port, 3.3 VDC
- DS-101 and DC-102 key loading, zeroize discrete
- HAVE QUICK (SS-110990 and ICD-GPS-060A compliant)
- RTCM 194-93/sc 104 differential GPS correction input

## Physical characteristics

<b>Power</b>	Operating : +3.3 VDC, 0.7 W typical Keep alive: +3.0 VDC to +6.0 VDC, 4 mW typical
<b>Weight</b>	1.4 oz (40 gm) nominal
<b>Size/volume</b>	2.45 x 1.76 x 0.285 in. maximum (6.2 x 4.5 x 0.724 cm)
<b>Temperature range</b>	-40° C to 85° C operating -55° C to 85° C storage

\* Export of precise positioning service (PPS) units is authorized for GPS Memorandum of Understanding countries only. PPS security modules must be obtained through foreign military sales (FMS) procurement.

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