RIMCO JSC

www.rimco.ru

The Wall-E16M

Anti-Jamming Anti-Spoofing Integrated CRPA GNSS

RIMCO JSC Wall-E16M is a 16-element GNSS Controlled Reception Pattern Antenna (CRPA) canmitigate/nullone interference or jamming signals in Global Navigation Satellite System (GNSS) bands offer higher protection against electronic warfare systems (EW) threats. Signal processing algorithms detect interference signals and amplitude and phase from each antenna element are adjusted in real-time to either to form a null in the direction of the interference source (null steering).

Battle-tested, these homegrown anti-jamming systems have proven their effectiveness. With warfare evolving, militaries worldwide are adopting electronic warfare cutting-edge systems and are continuously updating their arsenals. RIMCO, recognizing CRPAs growing significance, has prioritized their development over the past decade.

Our Wall-E16 CRAPs are not subject to any rules International Traffic in Arms Regulations or Export Administration Regulations.

Specification

Receive GNSS and Interference Rejection:
GLONASS L1+GALILEO E1+GPS L1+BDS B1
Antenna Array: 16 Array CRPA Antenna
Anti-Jamming:
100 dB for 1 jammer
75 dB for 15 jammer
Power Supply: 12 V
Power Consumption: 30 W
RF Connector: SMA-F
Power Connector: J30J
Weight: 1400 g
Size: 200 x 260 x 37 mm
Temperature: -40ºC to +85ºC
Environmental Tests: MIL-STD-810G
EMI / EMC: MIL-STD-461F

APPLICATION AREAS

- **Aircraft/Helicopters/UAV's**
- **Armored Vehicles**
- **Naval Platforms**

Advantages

- **Up-converter RF output for external GNSS receivers**
- **Up to 100 dB J/S performance with external third party GNSS receiver**
- **Low power consumption: less than 30.0 W**

RIMCO JSC www.rimco.ru

The Wall-E8M

Anti-Jamming Anti-Spoofing Integrated CRPA GNSS

RIMCO JSC GNSS Controlled Reception Pattern Antenna (CRPA) canmitigate/ nullone interference or jamming signals in GNSS bands. The Wall E8M is a 8-element CRPA designed for band Global Navigation Satellite System (GNSS) signal reception.
CRPA technology creates radiation pattern nulls in the direction of the interference/jammer, preventing LNA saturation and ensuring a usable GNSS signal. The output is a standard RF signal with the interference removed and a signal that is compatible with all GNSS receivers.

Specification

Receive GNSS:
GLONASS L1 + GALILEO E1 + GPS L1 + BDS B1
Interference Rejection:
GALILEO E1 + GPS L1 + BDS B1
Antenna Array (Antennas Element): 8
Anti-Jamming:
95 dB for 1 jam
80 dB for 3 jam
Power Supply: 24 V
Power Consumption: 20 W
RF Connector: TNC
Power Connector: JY27496
Weight: 900 g
Size: 210 x 210 x 35 mm
Temperature: -40°C to +85°C

APPLICATION AREAS

- **Aircraft/Helicopters/UAV's**
- **Armored Vehicles**
- **Naval Platforms**

Advantages

- **Up-converter RF output for external GNSS receivers**
- **Up to 95 dB J/S performance with external third party GNSS receiver**
- **Low power consumption: less than 20.0 W**

NavHub-X5 Navigation System

At RIMCO JSC, we have a deep expertise in providing position, velocity, and timing (PVT) for military surface mobility.
We leveraged that experience to design our NavHub-X5 navigation system to specifically meet the fastmoving, demanding environments of grung and maritime operations.
Employing our next-generation positioning, navigation and timing (PNT) technology, RIMCO JSC NavHub-4 offers an integrated navigational solution based on our modernized GNSS product lines and variety of optional sensors.
Additional protection comes with the ground-based AJA-4 anti-jam antenna, providing superior immunity in the most severe GNSS-challenged environments.
Our NavHun-X5 provides a flexible single device solution that can be adapted, enhanced, updated and supported throughout the life of the host platform.

This approach simplifies design, manufacture, logistics, accounting and long-term support. It provides the user with a solution to all platform needs through one device, fitted with selected sensors, which can be upgraded throughout the life of the vehicle.
Housed in a small, lightweight and rugged chassis, NavHub-X5 provides the interfaces needed to enable further navigational augmentation through the integration of additional external sensors (such as INS, sea lag or odometers).
Over the years, RIMCO JSC has gained vast experience in integrating immune navigation and anti-jamming solutions into various platforms. Our stringent procedures and MIL-STD compliance enable high overall quality and reliability.

KEY FEATURES & BENEFITS

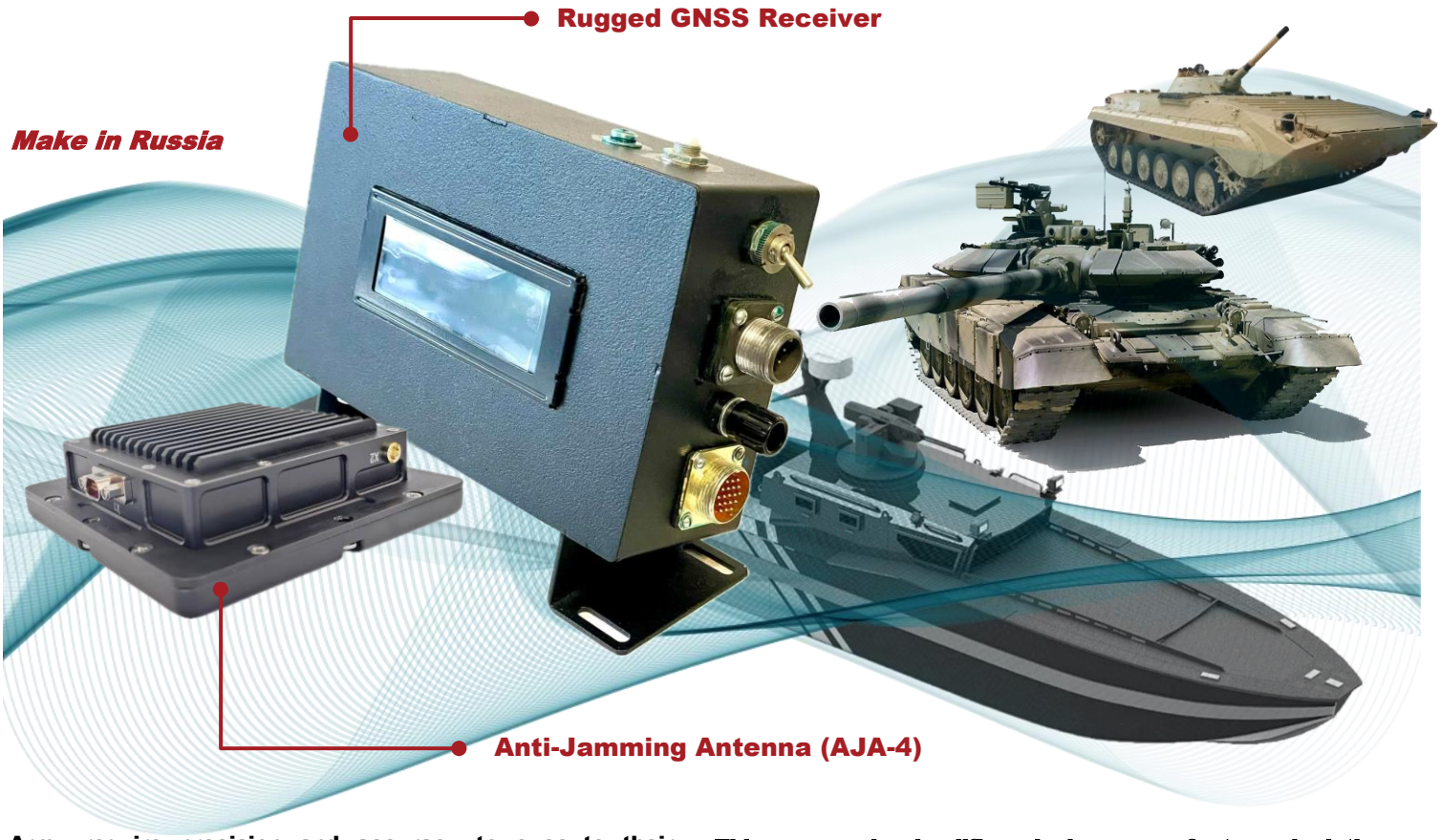
- **Embedded Black-box Data Recorder**
- **Embedded Telecom Module (option)**
- **Black-box Data Recorder**
- **Rugged Alliminium Construction Case**
- **Delivers exceptional anti-jamming**
- **Incorporates 4,8 or 16-element CRPA**
- **Units employ rugged design which offers high reliability (high MTBF) and low Life-Cycle-Cost.**
- **Performance (Actual performance for specific threat environments varies and is classified. Contact us for more information)**

Specifications

Frequency
- **NavIC: L5**
- **GLONASS: L1CA, L2CA, L2P, L3 CDMA**
- **Galileo: E1, E5a, E5b, E5 AltBoc, E6**
- **GPS: L1C/A, L1PY, L2C, L2P(Y), L5**
- **Beidou: B1I, B1C, B2a, B2I, B2b, B3I**
- **QZSS: L1C/A, L1C/B, L2C, L5**

Horizontal standalone: 1.2 m
Vertical standalone: 1.9 m
Time precision: 5 ns
Data Update Rate: 100 Hz
Dimensions: 147 x 114 x 42 mm
Weight: 900 g
Supply Voltage: +12 V
Power Consumption: 0.5 W
Operating temperature: - 40° C to + 71° C
Storage temperature: - 55° C to + 85° C
Interfaces
RS-232/RS-422/USB/CAN
Anti-jamming technology
Performance*
***Actual performance for specific threat environments varies and is classified.**

NavGate-1M Anti-Jamming Navigation System (AJNS)



Army require precision and accuracy to execute their missions, which becomes more difficult when GNSS is compromised when using enemy Electronic Warfare Systems.
The Anti-Jamming Technology from RIMCO JSC is battle-tested assured positioning technology that protects the satellite signals your UAV's, Ships, Tanks and Infantry Fighting Vehicle based on.
RIMCO JSC NavGate-1M includes a Rugged GNSS Receiver and Anti-Jamming Antenna (AJA-4), threats to support mitigate the evolving electronic threats that warfighters are facing today.
Our AJA-4 comprises the best ground GNSS anti-jam antenna electronics available, featuring an integrated, 4,8 or 16-element controlled reception pattern antenna (CRPA).
NavGate-1M generates and distributes assured positioning, navigation and timing information to all systems on board the platform through one device.
Our NavGate-1M provides a flexible single device solution that can be adapted, enhanced, updated and supported throughout the life of the host platform.

KEY FEATURES & BENEFITS

- Make in Russia
- **Embedded Liquid Crystal Display (LCD) or Vacuum Fluorescent Display (VFD) for navigation information**
- **Embedded Black-box Data Recorder**
- **Embedded Telecom Module (option)**
- **Black-box Data Recorder**
- Rugged Steel Construction Case
- Delivers exceptional anti-jamming
- Incorporates 4,8 or 16-element CRPA
- OANS units employ rugged design which offers high reliability (high MTBF) and low Life-Cycle-Cost.
- Performance (Actual performance for specific threat environments varies and is classified. Contact us for more information)

This approach simplifies design, manufacture, logistics, accounting and long-term support. It provides the user with a solution to all platform needs through one device, fitted with selected sensors, which can be upgraded throughout the life of the vehicle.
Housed in a small, lightweight and rugged chassis, NavGate-1M provides the interfaces needed to enable further navigational augmentation through the integration of additional external sensors (such as INS, sea lag or odometers).

Over the years, RIMCO JSC has gained vast experience in integrating immune navigation and anti-jamming solutions into various platforms. Our stringent procedures and MIL-STD compliance enable high overall quality and reliability.

Specification

Frequency

- **NavIC: L5**
- **GLONASS: L1CA, L2CA, L2P, L3 CDMA**
- **Galileo: E1, E5a, E5b, E5 AltBoc, E6**
- **GPS: L1C/A, L1PY, L2C, L2P(Y), L5**
- **Beidou: B1I, B1C, B2a, B2I, B2b, B3I**
- **QZSS: L1C/A, L1C/B, L2C, L5**

Horizontal standalone: 1.2 m
Vertical standalone: 1.9 m
Time precision: 5 ns
Data Update Rate: 100 Hz
Liquid Crystal Display Dimensions: 70,4 x 20,8 mm
Black-box Data Recorder (memory capacity): 128 Mbit
Dimensions: 198 x 132 x 85 mm
Weight: 1200 g
Supply Voltage: +12 V
Power Consumption: 0.5 W
Operating temperature: - 40° C to + 71° C
Storage temperature: - 55° C to + 85° C

Interfaces

RS-232/RS-422/USB

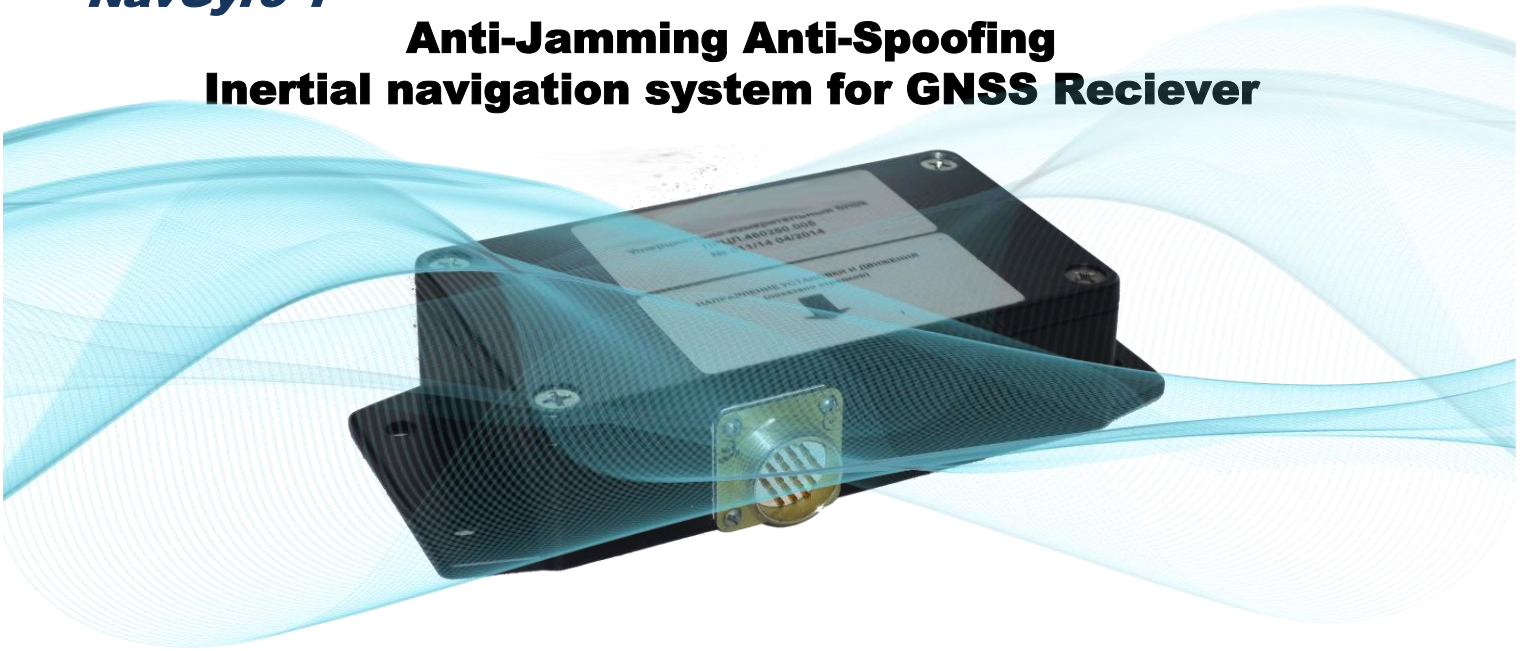
Anti-jamming technology

The "RF add-on" configuration allows for plug-and-play AJA-4 installation on top of existing NavGate-1M.
Delivers anti-jamming performance of ~95 dB J/S*
***Actual performance for specific threat environments varies and is classified.**

RIMCO JSC www.rimco.ru

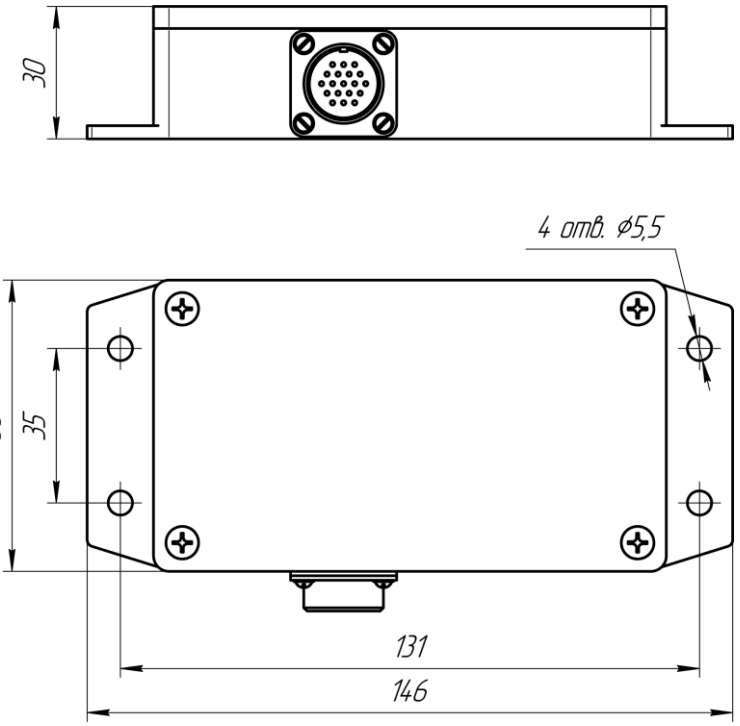
NavGyro-1

Anti-Jamming Anti-Spoofing Inertial navigation system for GNSS Reciever



RIMCO JSC an inertial Navigation System (INS) is a navigation device that uses motion sensors (accelerometers and gyroscopes) and a embedded mini-computer to determine the position, orientation, and velocity of a moving UAV by dead reckoning, without relying on external references.

NavGyro-1 it combines an Inertial Measurement Unit with an external GNSS Receiver, using an advanced sensor fusion algorithm to provide accurate UAV positioning and orientation, even in jamming and spoofig signals electronic warfare system



Specification

Error in determining the coordinates of the UAV in the absence of GNSS signals for 10 minutes flight is 350 meters
Vibration (strength) (random 20-2000 Hz): 6 g
Impacts (strength) (duration 1 ms): 90 g
Data output: 500 Hz
Power Supply: 12 V
Power Consumption: <1.5 W
Port: RS232/485
Weight: 329 g
Size: 146 x 66 x 30 mm
Temperature: -40ºC to +85ºC
Environmental Tests: MIL-STD-810G
EMI / EMC: MIL-STD-461F

APPLICATION AREAS

- **UAV's**
- **Armored Vehicles**
- **Naval Platforms**

- **Contains a baroaltimeter - the ability to dampen an unstable vertical channel has appeared;**
- **Contains a magnetometer;**
- **Two redundant accelerometers have been added to avoid anomalies that are observed on almost a third of acceleration sensors in the temperature range, another accelerometer has been added to measure accelerations in an extended range**

RIMCO JSC www.rimco.ru

NavGyro-2

Anti-Jamming Anti-Spoofing Inertial navigation system

FOG-triad, an accelerometer-triad and a system CPU

NavGyro-2 embedded with Fiber Optic Gyroscopes (FOG)

Perfectly suited for military helicopters, aircraft and UAVs, the NavGyro-2 sets the new standard for resilient navigation performance.
GNSS-Denied Environment Resilience
FOG Unlimited Life Duration

RIMCO JSC NavGyro-2 an Inertial Navigation System (INS) is a navigation device that uses motion sensors (FOG and accelerometers) and a embedded mini-computer (or CPU) to determine the position, orientation, and velocity of a moving UAV by dead reckoning, without relying on external references.
The main elements of the NavGyro-2 are a FOG-triad, an accelerometer-triad and a system CPU for the platform calculations. All elements are hard- mounted on a sensor block.
NavGyro-2 it combines an Inertial Measurement Unit with an external GNSS Receiver, using an advanced sensor fusion algorithm to provide accurate UAV positioning and orientation, even in jamming and spoofig signals electronic warfare system

Specification

Heading (RMS): 0.4 deg / cos (latitude);
Roll & Pitch (RMS): 0.1 deg
Error in determining the coordinates of the UAV in the absence of GNSS signals for 10 minutes flight is 350 meters
Data output: 500 Hz
Power Supply: 24 V
Consumption: 15 W
Port: RS232/485/422/Ethernet
Weight: 1330 g
Dimensions: 157 x 79 x 110 mm;
Temperature: -40°C to +85°C
MTBF: 200,000 h
Environmental Qualification: MIL-STD-810

APPLICATION AREAS

- **UAV's**
- **Armored Vehicles**
- **Naval Platforms**