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NavRakshak

CONTROLLED RECEPTION PATTERN ANTENNA
ANTI-JAM ANTI-SPOOF GPS/GNSS SOLUTION

NavRakshak

ANTI-JAM ANTI-SPOOF INTEGRATED CRPA GNSS

Stable Positioning, Navigation & Timing for **UAVs, Guided Munitions, Manned Aircrafts, & Armored Land Vehicles** operating in contested GNSS Electronic Warfare environments.

State-of-the-art Controlled Reception Pattern Antenna (CRPA) with advanced digital signal processing and beam-forming to eliminate GNSS interference. Available in three version to suit various mission needs **NR-4, NR-8 and NR-16.**

Supplied with a **military-grade** multi-constellation **GNSS receiver**, equipped with advanced **anti-spoofing algorithms**.

Weight < 150g
Ultra - Low SWAP

100 - 110 dB J/S
Proven Anti-Jam Performance

> 50% IC
No Chinese content

Plug & Play
Easy retrofit on all platforms

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Battle Tested Solution

Proven against Military Grade GNSS Jammers and real Electronic Warfare equipment used in Modern Conflicts.

Wideband FMCW-AWGN Barrage Jammers

Narrowband Continuous Wave (CW) Jammers

Pulsed WB Radio Frequency Noise Jammers

Collocated GNSS Jamming & Spoofing Attacks

Type of Jammer	Power (ERP) of the WB AWGN Jammer	NR - 8 Safe Distance (>110db J/S)	NR - 4/16 Safe Distance (>100db J/S)	Competition Safe Distance (>80db J/S)
Portable	< 30 W	> 50 m	> 150 m	> 830 m
Tactical	< 500 W	> 190 m	> 600 m	> 3400 m
Military	< 2 kW	> 380 m	> 1200 m	> 7000 m

Note: J/S (Jamming-to-Signal Ratio) is used to estimate the **minimum standoff distance from a jammer** at which a valid GNSS navigation solution can be maintained. All calculations here include a 5 dB J/S safety margin; **better performance may be observed in real world**, subject to real-time environmental conditions. Request a detailed technical walkthrough for more information.

Key Features

PROTECTION FROM UP TO 15 JAMMERS

Up to 3 jammers with 4 Element; 7 jammers with 8 elements and 15 jammers with 16 elements.

ADAPTIVE NULL STEERING

Adaptive null steering to dynamically optimize reception and suppress hostile interference

ULTRA-LOW SWAP

CRPA Antenna + RF Backend integrated in a single rugged module weighing as little as 150g.

ADVANCED DIGITAL SIGNAL PROCESSING

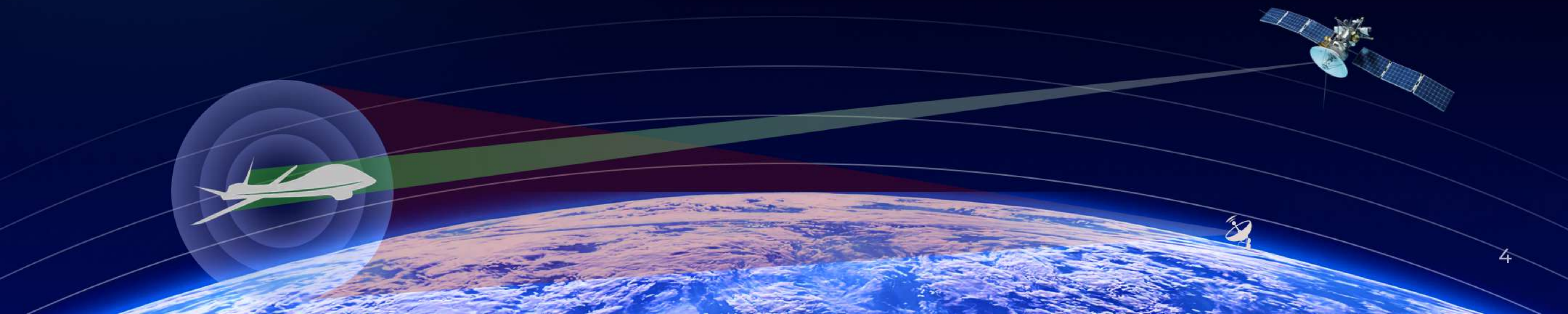
Additional digital anti-jamming features like adaptive notch filtering and pulse blanking.

HIGH ANTI-JAM PERFORMANCE

Proven anti-jam performance of 100dB-110dB Jammer/Signal Ratio against military jammers.

PLUG AND PLAY (PX4 & APM)

Seamless integration into new & legacy platforms with a wide range of messaging format support.



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NavRakshak CRPA Versions

Parameter	NAVRAKSHAK - 4	NAVRAKSHAK - 8	NAVRAKSHAK - 16
Antenna Array	4-Element CRPA Array	8-Element CRPA Array	16-Element CRPA Array
Simultaneous Nulling Directions	3 (Protection from 3 Jammers)	7 (Protection from 7 Jammers)	15 (Protection from 15 Jammers)
Anti-Jam Performance	**>100 dB J/S**	**>110 dB J/S**	**>100 dB J/S**
Protected GNSS Bands*	GPS + GLONASS + GALILEO + BEIDOU		
Weight	150g	700g	1300g
Dimensions	76mm x 76mm x 23mm	160mm x 160mm x 35mm	240mm x 235mm x 30mm
Powering	12VDC @ 7W	9-24VDC @ 12W	9-24VDC @ 25W
Interfacing Connectors	Power via J30J-9ZKL RF Output via SMA Female	Power via J30J-9ZKL RF Output via SMA Female	Power via J30J-15ZKP RF Output via SMA Female
Enviornmental	MIL-STD 810H (Vibration & Jerks), IP65, Operating Humidity <95% RH, and Operating Temperature -40° C to + 60° C		

*Protected frequency band details are **CLASSIFIED** in accordance with **OPSEC Regulations**. Disclosure is available only upon authorized request via the Sales Team.

NavRakshak GNSS Receiver

MULTI-CONSTELLATION MULTI-BAND ANTI-JAM ANTI-SPOOF GNSS RECEIVER

Navrakshak CRPAs are supplied with a **military grade GNSS receiver**, tightly-integrated with the tracking loops of the CRPA RF back-end. The receiver comes pre-loaded with **custom firmware & config**, optimized to ensure stable PNT in contested GNSS jamming and spoofing environments.

Each receiver unit is **calibrated** to support the **dynamic characteristics** of the intended deployment platform including fixed-wing aircraft, multi-rotor UAVs, highly maneuverable munitions, and land-based vehicles.

Parameter	Specification
GNSS Constellations And Bands	GPS L1, L2, L5 GAL E1, E5, E6 BDS B1I, B1C, B2a, B3I NavIC L5 SBAS L1C/A
Interfacing Connectors	RF Input via SMA-Female Data output via GHR-06V-S
GNSS Data Protocols	DroneCAN interface (compatible with **Ardupilot and PX4**) RTCM v2.x, v3.x (For RTK Corrections)
Powering	5V TTL UART @ 1W Via GHR-06V-S)
Position Accuracy (W Standard GNSS Antennas)	2D accuracy without RTK 1.20m 2D accuracy with RTK 0.01m
Position Accuracy (W NavRakshak CRPA)	2D accuracy without RTK 5.20m 2D accuracy with RTK 0.04m
Mechanical	Weight 40g Dimensions 76mm x 76mm x 23mm

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TECHNOLOGIES

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