



BIG BANG BOOM SOLUTIONS

Your Friendly Neighbourhood Defence Company



VAJRA

SENTINEL SYSTEMS

Vajra Sentinel Systems are equipped with cutting-edge technology tailored for the detection and neutralization of commercially available off-the-shelf (COTS) drones. The system seamlessly integrates advanced detection and counter measures delivering a superior level of airspace security.



ABOUT US

Established in 2018, Big Bang Boom Solutions Pvt. Ltd. (BBBS) specializes in deep tech defense technology, with a strong focus on developing deep tech technologies. This encompasses a diverse range of product, such as Anti-drone defense systems, 360-degree situational awareness for armored vehicles and next-generation non-lethal naval vessel immobilization system.



BBBS has expertise across various core domains, spanning from Artificial Intelligence, Cyber security, Electronic warfare, UAV technology, Dev Ops, and Material Science. Collaborating closely with clients and partners from countries across the world.

BBBS has anchored its position as a global player in the defense technology sector.

VAJRA VARIANTS

VAJRA SCAN - X

Long Range RF Drone Detection

06

VAJRA SCAN - S

Portable RF Drone Detection

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VAJRA SHIELD - X

Long Range Drone Jammer

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VAJRA SHIELD - S

Portable Drone Jammer

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VAJRA STRIKE

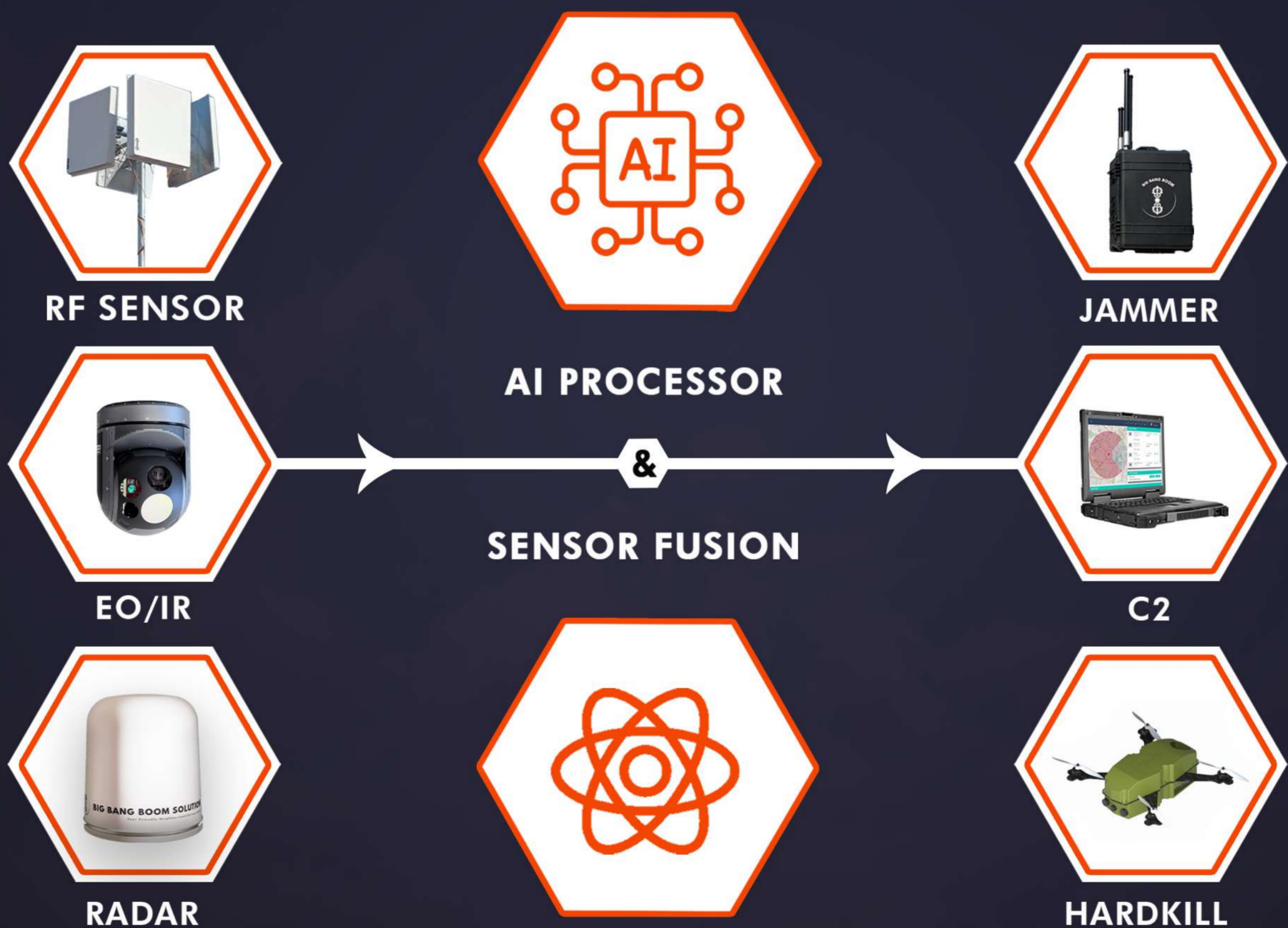
Direct Energy Weapon (DEW)

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WHY VAJRA?



ARCHITECTURE



KEY FEATURES

BBBS's VAJRA Sentinel Systems, a cutting-edge security solution that excels in the detection, identification, and neutralization of unauthorized drones.

With its advanced features and precise capabilities, it guarantees effective protection against potential threats.

SIMULTANEOUS MULTI-DRONE DETECTION

The system can simultaneously detect up to 15 drones, enhancing situational awareness and effective against swarms. This capability is crucial for securing large areas and critical infrastructure effectively.

COMPREHENSIVE DRONE DETECTION

Achieves up to 99% coverage of COTS drones by market volume, ensuring a robust detection capability. The system allows real-time detection and classification using passive RF scanners, efficiently identifying potential threats.

EXTENSIVE DETECTION RANGE & FREQUENCY

The Vajra range of systems offers impressive drone detection range of up to 15 kms, providing extended coverage for expansive areas. It can detect frequencies ranging from 400MHz to 6GHz, enabling identification of a wide range of drone models and types.

INSTANT NOTIFICATIONS

Users receive immediate alerts and notifications, ensuring prompt alerts when unauthorized drones are detected. This feature enables quick response and proactive measures to mitigate potential risks.

USER-FRIENDLY INTERFACE

Our system boasts an intuitive interface tailored for security personnel. This thoughtful design promotes accessibility and seamless operation. It simplifies navigation, minimizing the time needed for training.

DYNAMIC LIBRARY UPDATES

The system benefits from frequent library updates through network or cloud-based connections. This ensures the system stays up-to-date with evolving drone technologies, maintaining high detection accuracy.

TECHNICAL SUPPORT & TRAINING

BBBS provides extensive technical support and training resources by 24/7. This dedicated assistance empowers clients to fully optimize their counter-drone solution.

**"Unmatched Security & Innovation.
Elevate your airspace defense with precision and power.
Vaja Sentinel Safeguarding the skies, ensuring peace of mind."**



VAJRA SCAN- X

LONG RANGE DETECTION

Vajra Scan X features an advanced RF Sensor (X-long range) engineered for precise detection and neutralization of aerial threats. Operating on passive RF technology, it guarantees reliability by minimizing false alarms and accurately identifying potential drone intrusions and its pilot location with GPS coordinates.

With an impressive 15-kilometer detection range, Vajra Scan X surpasses conventional systems, allowing for early threat identification and proactive responses. Opting for Vajra Scan X means choosing unmatched airspace protection that provides tangible assurance for the safety of critical assets and operations, going beyond mere peace of mind.



SPECIFICATION

CORE TECHNOLOGY - Detect & classify using passive RF scan & AI Finger Print Library

DETECTION FREQUENCY - 400 MHz - 6 GHz

DETECTION DISTANCE - 15 km Radius

AVG DETECTION TIME - Within 5 sec of drone intrusion.

DETECTION CAPABILITY - Detect pilot location; simultaneous detection up to 15 drones.

DETECTION COVERAGE - 99% of COTS drones by market volume

LIBRARY UPDATES - Via network interface / cloud database



VAJRA SCAN- S

PORTABLE DETECTOR

Vajra Scan S offers superior short-range drone detection with an impressive 7-kilometer range. This adaptable system swiftly identifies and counters drones, offering critical security in various scenarios. Whether mounted on a vehicle or deployed in field, Vajra Scan S provides unmatched flexibility for safeguarding high-profile events and sensitive areas.

Vajra Scan S is an essential asset for safeguarding your airspace. Elevate your security measures with Vajra Scan S.

Setting a new standard in short-range drone detection!

SPECIFICATION

PRODUCT

Weight

9.5 kg

Input Voltage

100V - 240V

Dynamic range

70db

ENVIRONMENT

IP Rating

>IP66

Operational

Temp

-20°C to 55°C

PERFORMANCE

Methodolgy

Passive RF

Detection

7km

Frequency

400 MHz - 6 GHz



SPECIFICATION

TECHNOLOGY

FM Modulated white noise

COVERAGE

99.9% of COTS drones by market volume (Generic)

CHANNELS

433 MHz, 913 MHz
1.2 GHz L2 Band
1.5 GHz L1 Band
2.4 GHz, 5.8 GHz

DISTANCE

US DJI Phantom 4:
15km range,
low RF noise & active bands

JAMMING SECTOR

360 coverage using
Directional antennas

CAPABILITY

Multiple drones within
jamming zone simultaneously
blocked (effective against
swarms)

OPERATIONS

Portable system,
one-person operation.

POWER

Voltage - 220 VAC
Consumption - 3000 W

VAJRA SHIELD- X

LONG RANGE JAMMER

Vajra SHIELD X, a cutting-edge long-range jamming solution with an impressive performance of 18 kilometers at UTRR and Army trails. Designed for versatile deployment in various scenarios, Vajra SHIELD X stands as a formidable defense against unauthorized drones. Its advanced Smart Jamming technology allows for precise interference, distinguishing between friendly and hostile drones, ensuring optimal protection for critical areas and events.

The system is upgradable with hand held detection and custom selectable frequency.

With Vajra SHIELD X, you can be assured of a sophisticated and effective countermeasure, providing unmatched security in environments where safeguarding airspace is paramount.



VAJRA SHIELD- S

PORTABLE DRONE JAMMER



Vajra Shield S, a pioneering short-range jamming system designed for critical airspace protection. With an impressive range of 5 kilometers smart jamming, this adaptable system swiftly counters unauthorized drones, providing vital security in diverse scenarios. Whether deployed manually or mounted on a vehicle, Vajra Shield S offers unparalleled flexibility, making it an invaluable asset.

Crafted with precision and leveraging cutting-edge technology, Vajra Shield S ensures swift deployment for rapid threat response. Trust in Vajra Shield S for secure operations, solidifying its position as an indispensable tool for defending your airspace. Elevate your security protocols with Vajra Shield S, establishing a new standard in portable jamming capabilities.

SPECIFICATION

PRODUCT	ENVIRONMENT	PERFORMANCE
<p><u>Weight</u> 8.5 kg</p> <p><u>Power</u> 100V - 240V</p> <p><u>Dynamic range</u> 70db</p>	<p><u>IPR rating</u> >IP66</p> <p><u>Operational Temp</u> -20°C to 55°C</p>	<p><u>JAMMING</u> 5km</p> <p><u>Frequency</u> 433 MHz 913 MHz 1.2 GHz L2 Band 1.5 GHz L1 Band 2.4 GHz 5.8 GHz</p>



SPECIFICATION

DAY / NIGHT OPERATIONS

TRACK TARGETS IN LOW-LIGHT (<10 :LM)
DAY CAMERA | THERMAL IMAGING

DETECTION RANGE

MINI UAV (1.6M X 0.3M) : 8KM+
MICRO UAV (0.3M X 0.3M) : 6KM+

ALTITUDE TARGET

MORE THAN 3KMS

TRACKING RANGE

MORE THAN 5KMS

OPTICAL SIGHT (FIELD OF VIEW)

(A) WIDE : MORE THAN 30°
(B) NARROW : MORE THAN 2.5°

THERMAL SIGHT (FIELD OF VIEW)

(A) WIDE : MORE THAN 12° X 10°
(B) NARROW : MORE THAN 0.6° X 0.6°

AZIMUTH COVERAGE

±90° (SWIVEL MOVE)

ELEVATION COVERAGE

MINIMUM - 5° TO + 70°

CUEING

INTERGRATED SYSTEM WITH LASER
WEAPON, JAMMER, AND RADAR
PASSIVE RF CUEING.

VAJRA SIGHT

ELECTRO-OPTIC/ INFRA RED VISION

Electro-Optical/Infrared (EO/IR) technology, fusing visual and thermal imaging, plays a pivotal role in drone counter systems. Its versatility in detecting and tracking drones across varied environmental conditions bolsters accuracy by distinguishing them from other objects. Real-time data feeds empower swift decision-making. By incorporating EO/IR, we establish a robust autonomous defense against drone threats, ensuring comprehensive and dependable protection for critical areas and events.

This advanced technology not only meets evolving security needs but sets a new benchmark in safeguarding airspace. With EO/IR as a cornerstone, our drone counter system stands as a reliable shield against potential aerial intrusions. Its artificial intelligence capabilities elevate security measures, providing peace of mind in an ever-changing threat landscape.



VAJRA SPOT

RADIO DETECTION & RANGING

Vajra Spot, a sophisticated system that combines intelligent software with cost-effective radar, purpose-built for precise drone detection and tracking. With a vast 360-degree azimuth coverage and an expansive 60-degree elevation span, Vajra Spot offers early warning of approaching drones from all directions, affording you crucial response time. Its substantial elevation coverage ensures no blind spots from drones arriving overhead.

Vajra Spot excels in 3D position tracking, providing crucial height data for seamless detection and mitigation of rogue drones. In critical situations, every moment counts, requiring precise and swift tracking for timely interventions. Its compact size, lightweight build, and exceptional detection range make Vajra Spot a versatile solution that can be easily deployed and redeployed as needed. Additionally, its micro-Doppler classification capability confirms rotor blades, enabling Vajra Spot to detect hovering drones and differentiate them from other moving objects, significantly reducing false alarms.



SPECIFICATION

<u>Technology</u>	- FMCW
<u>Frequency</u>	- X-Band (8900-9650MHz)
<u>Power Output</u> (Continuous)	- 2x12W
<u>Instrumented Range</u>	- 5 km
<u>Detection Range:</u> DJI Inspire(3kg)	- 4 km
<u>Detection Range:</u> DJI Phantom (1kg)	- 3.4 km
<u>Detection Range:</u> DJI Mavic Mini (<249g)	- 0.8 km
<u>Main Beam Width</u>	- 6° x 6°
<u>Azimuth Coverage</u>	- 360°
<u>Elevation Coverage</u>	- 60°
<u>3D Elevation Accuracy</u>	- 1°
<u>Range Accuracy</u>	- 0.6m
<u>Track While Scan</u>	- Yes
<u>Scan Speed</u>	- Is Update Rate
<u>Classification Method</u>	- Micro-Doppler
<u>Upmost Dimensions</u> (Dia. x Height)	- 554mm x 623mm
<u>Upnast Weight</u> (excl. foot)	- 25 kg
<u>Power</u>	- 100-240VAC 50-60Hz 200 nom 600w max
<u>Communication</u>	- Ethernet, 1000Base-T
<u>IP Rating</u>	- IP66
<u>Operational Temperature</u>	- -40°C to 65°C
<u>Environmental Testing</u>	- MIL-STD_810H Certified



VAJRA SHOT

DRONE JAMMER GUN

The Vajra Shot represents a groundbreaking handheld anti-drone jammer, setting itself apart with its software-defined functionality. It possesses the unique ability to adapt its interference output frequency using software, effectively neutralizing a wide array of standard and non-standard unauthorized drones.

This jammer's compact and lightweight design not only ensures exceptional mobility but also makes it a prime choice for protecting crucial meetings, overseeing large-scale events, and conducting routine patrols in specific locations that demand reliable low-altitude security. Its innovative software-driven approach sets a new standard in countering the evolving challenges posed by unauthorized drones, offering a versatile and potent solution for safeguarding various scenarios.



SOFTWARE CONTROL

Software Enabled Control Panel for an active Jamming Frequency

HIGHLY MOBILE

Single operator can provide single point security

ROBUST DESIGN

Strength and Balanced design for extended use



SPECIFICATION

JAMMING ABILITY & RANGE	- 2 km. (Open environment, 0.1 W radiation/ source)
JAMMING FREQUENCY	- 400MHz , 900MHz , 2.4GHz, 5.8GHz, 1.5GHz
SOFTWARE CUSTOMIZABLE	
FREQUENCY BANDS	- 300MHz ~2500MHz software custom configuration
LED DISPLAY	- Self-check status interference duration.
OVERALL WEIGHT	- ≤3.5kg
POWER SUPPLY	- Built—in Lithium battery

DETECTION CAPABILITIES

The vajra shot can be upgradable as vajra super shot by integrating it with handheld drone detector

PORTABLE & SIMPLE

The Product is made of light weight materials, easy to carry: one- button, start design, easy to operate, ready to use

PROLONGED ENDURANCE

Hours of uninterrupted operation with simultaneous jamming at 2.4 GHz, 5.8 GHz & GPS frequencies.



VAJRA SLAYER

HARD KILL DRONE

The Vajra Slayer, an exceptional hard-kill drone meticulously crafted from lightweight yet exceptionally strong carbon fiber. Its robust design sets a new standard for hard-kill drone technology, providing unmatched target interception with cueing vajra spot and resilience in the face of aerial threats. Vajra Slayer is engineered for precision and reliability by using EOIR terminal navigation, ensuring it delivers effective countermeasures against hostile drones. With its formidable construction, Vajra Slayer stands as a formidable defense, offering peace of mind and unwavering protection for critical areas and operations. Choose Vajra Slayer for a superior hard-kill drone solution, guaranteeing the safety and security of your airspace.



SPECIFICATION

MATERIAL	:	CARBON FIBER, KEVLAR
DIMENSION	:	30CM X 30 CM X 45 CM
GNSS	:	GLONASS/GPS/IRNSS
CAMERA	:	DAY/ NIGHT CAPABILITY
FLIGHT ALTITUDE	:	> 4500 M
TARGET ENGAGEMENT HEIGHT	:	1500 M
DRONE KILL RANGE	:	4 KM BY DIRECT IMPACT
MAX FLIGHT TIME	:	15 -20 MIN

VAJRA STRIKE

DIRECT ENERGY WEAPON

This advanced technology harnesses focused energy beams to neutralize aerial threats swiftly and effectively. With pinpoint accuracy and rapid response capabilities, Vajra Strike stands at the forefront of drone defense, providing a reliable solution for safeguarding critical areas and events. Its compact design and versatile deployment options make it an invaluable asset.



AI & INTERFACE

GROUNT STATION CONTROL

Vajra's AI system designed for countering drones utilizes integrated sensors, an advanced artificial intelligence framework, sophisticated sensor fusion and computer vision algorithms, including the Friend & Foe algorithm. This combination ensures accurate identification & categorization of drones and effective neutralization.





In the ever-evolving landscape of aerial threats
Vajra Sentinel Systems stands as a beacon of innovation and security. Our
commitment to cutting-edge technology, encompassing advanced detection,
jamming, and modular solutions, reinforces our dedication to providing
unmatched airspace security. Together, we shape a safer tomorrow.

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