ECHODYNE

MESA® Radar for Defense

COMMERCIALLY EXPORTABLE ESA RADAR SYSTEMS WITH UNPARALLELED PERFORMANCE

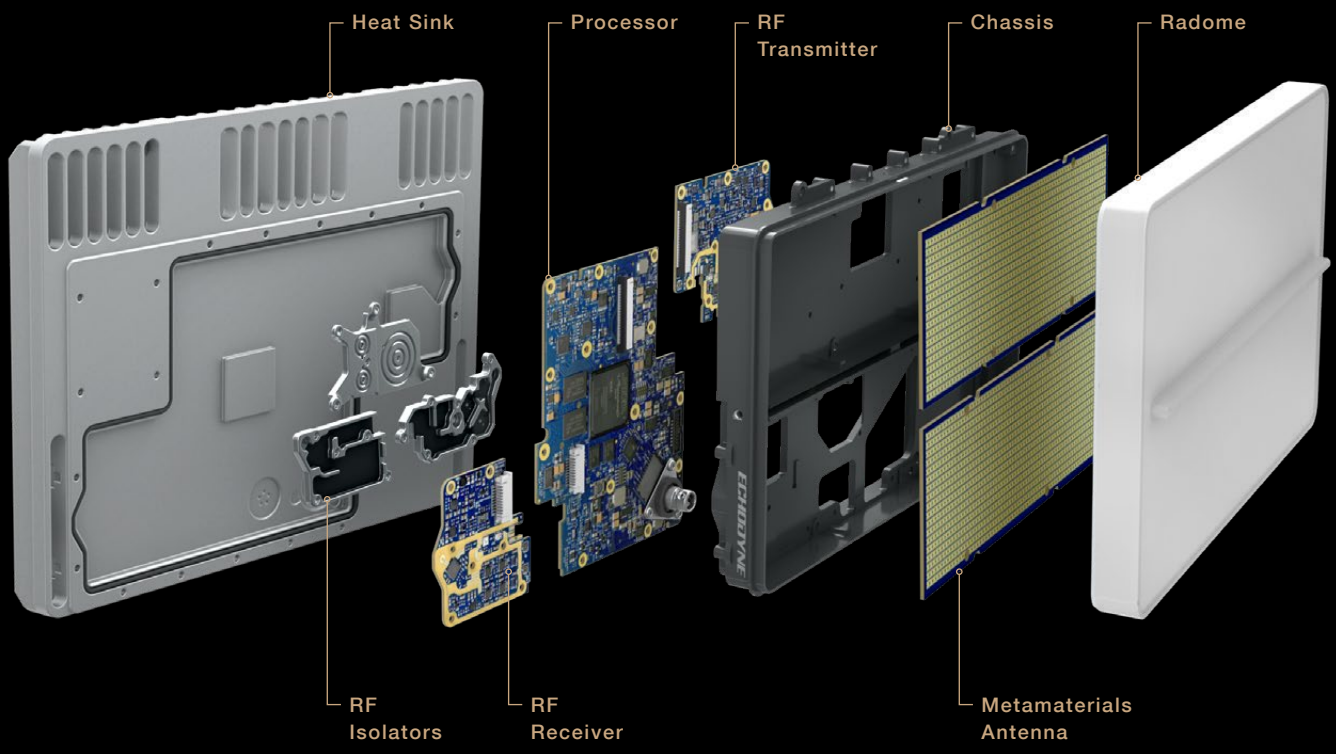
BASE SECURITY + COUNTER-UAS + PORTABLE ISR + FORCE PROTECTION + ASSET SECURITY + ON-THE-MOVE + CUSTOM APPLICATIONS

Information leads to advantage. The better the information, the greater the advantage.

Radar is the data foundation in sensor arrays, weapons platforms, and funded programs because it generates actionable situational awareness data in any weather or lighting condition at very long range to achieve maximum reaction time.

Echodyne is a U.S. innovator and manufacturer of a new type of ESA radar built on a radical antenna design, metamaterials electronically scanned array (MESA®), with hundreds of Tx/Rx modules at significantly lower unit cost than found in traditional phase-shifter-based designs.

Radar, like every sensor in the array, is a means of data acquisition. Today's threats require data precision that improves sensors, effectors, and solutions and maintains capital symmetry with inexpensive drone threats. The object metadata from MESA radar is richer, faster, more accurate, and more reliable, with the precision and data rates to lock optical sensors on targets and drive fire control solutions. Data fidelity provides a decisive advantage.



MESA is a Rare Breakthrough in ESA Radar.

Active ESA radars have long been the gold standard for range and performance, with today's fielded ESA radars offering extraordinary performance but at an equally extraordinary acquisition and operational capital cost. The primary obstacle to broader use of ESA is directly related to the system architecture, which is built using complex Tx/Rx modules with high lifecycle costs. Simply, traditional ESA requires significant upfront investment in equipment, maintenance, and staffing.

Echodyne has taken a different approach, employing the physics design concept called metamaterials to create a breakthrough in ESA radar. Using standard materials and processes, a metamaterials design creates counter-intuitive results when assembled in a very specific way. In the case of Echodyne radar, the MESA design allows electromagnetic energy to be shaped and steered without moving parts – a true "phased array" radar with no phase shifters. This approach unlocks other elements in radar design that produce a compact, solid-state radar with the range and, importantly, the accuracy to detect and track objects of interest across a large field of view.

Combined with powerful on-radar and off-radar software, Echodyne's patented MESA design creates a commercially priced radar with ultra-low SWaP and unrivaled performance.

Radar reinvented.

EchoShield radars on Counter-UAS container systems from Chess Dynamics.

Why are Echodyne Radars the Choice for More Missions?

Data Fidelity. Radar is a means to acquire data, gain information, and achieve superior situational awareness. Echodyne radars generate the most accurate data in their class. More accurate data, better fusion, smarter systems.

Systems Integration. Built for data fusion and systems integration, Echodyne radars utilize TCP/IP over Gigabit Ethernet and offer multiple rich-data output options that can be individually or simultaneously ingested.

Networking. Designed for deployment in cooperative networks, Echodyne can mix radar products to provide a single integration point for all radar data.

SWaP. MESA design creates true commercial ESA radar with no moving parts and results in an unbeatable size, weight, and power format.

Engineering Breakthrough. Advanced ESA beamforming performance at commercial radar prices. Designed and built in the USA.

Key Application

COUNTER-UAS

Drones represent a challenge for existing radars which had never been tasked with detecting and tracking tiny, agile, low flying aircraft. Counter-UAS capabilities are quickly becoming integral to existing Programs. With multiple rich-data options for system integration, Echodyne radars power dozens of C-UAS systems from detection through identification and targeting.

RADAR SOLUTIONS

EchoShield
With on-the-move (OTM) capabilities, multiple waveforms, and variable beam schedules for RWS and mobile short-range air defense (M-SHORAD) programs.

EchoGuard
Integrated into dozens of counter-UAS systems and solutions, with accuracy that meets targeting radar requirements for Remote Weapons Stations (RWS).

EchoFlight
EchoFlight is used on tethered drones for airspace surveillance, as well as used as the targeting radar on airborne interceptor platforms.

BASE SECURITY / FORCE PROTECTION

Included in the U.S. Army's Security Surveillance System (SSS) program, MESA radar is the primary sensor for 3D perimeter surveillance that rapidly detects and accurately tracks objects of interest, locks optical sensors for visual threat identification, and precisely guides effectors or reaction forces. Portable and easily configured via an intuitive interface, Echodyne's low SWaP radars can be deployed as fixed, temporary, on-the-halt, and on-the-move force multipliers that deliver the information advantage.

RADAR SOLUTIONS

EchoShield
For locations with significant acreage.

EchoGuard
Ideal for general security and surveillance.

PORTABLE ISR

Information is an advantage for remote missions and force protection in austere locations. At distance, every pixel matters for reconnaissance, surveillance, target acquisition (RSTA) operations. Optical sensors perform better when slewed to precise coordinates. Compact, lightweight, low power Echodyne radars unlock new capabilities for expeditionary forces conducting discrete intelligence, surveillance, and reconnaissance (ISR) operations.

RADAR SOLUTIONS

EchoGuard
Fielded with Lightweight Deployment Kit (LDK).

EchoShield®

Multi-Mission 4D Radar

Next-Gen ESA

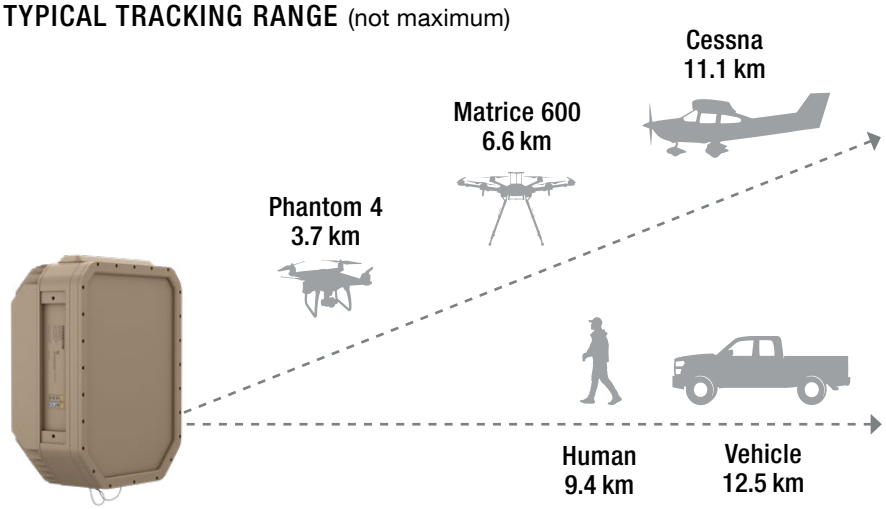
Intelligent Search

Extraordinary Accuracy

Medium-Range Superiority

EchoShield is a medium-range, software-defined, pulse-Doppler, cognitive 4D metamaterials ESA (MESA) radar. With the equivalent of more than 500 Tx/Rx modules, EchoShield intelligently searches a large, customizable field of view and tracks ~1,000 objects of interest with industry-leading angular accuracy. High-fidelity data is delivered in a proprietary format over a standard TCP/IP Gigabit Ethernet connection with multiple data-rich output options available via API. EchoShield utilizes cognitive radar concepts to combine different waveforms, beam schedules, and other resources to create a dynamic, powerful, multi-mission, multi-domain radar system. A steady cadence of software updates offers new capabilities and extends capabilities such as EchoShield's industry-leading classification. Highly precise object metadata enriches fusion and decision-making, while quick setup and on-the-move (OTM) capabilities bring value to multiple mission types.

TYPICAL TRACKING RANGE (not maximum)



RADAR SPECS

Frequency
Ku-band 15.4 – 16.6 GHz

Field of View
130° Azimuth x 90° Elevation

Track Accuracy
< 0.5° Azimuth x < 0.5° Elevation

Track Update Rate
10 Hz

Size
42.5 cm x 32.9 cm x 18 .1 cm

Weight
19.2 kg

Power
+20 to +33 VDC (+28 V nominal)
<250 W Operating

Learn More About EchoShield →

EchoGuard®

4D Surveillance Radar

Ultra-Low SWaP

Highly Portable

Market-Leading Performance

Short-Range Dominance

Echodyne combines patented MESA technology with powerful software to deliver ESA performance in a compact solid-state format that detects, tracks, and classifies objects of interest on the ground or in the air, regardless of weather or lighting conditions. Breakthrough Tx/Rx module density directs thousands of pencil-thin beams across the 120° azimuth x 80° elevation field of view in milliseconds. EchoGuard rapidly detects and precisely tracks up to 20 objects of interest, delivering high-fidelity data in a proprietary format over a standard TCP/IP Gigabit Ethernet connection. With multiple data-rich output options available by API, including raw data, EchoGuard's superior spatial accuracy creates a robust data foundation for a range of Defense applications.

RADAR SPECS

Frequency
K-band 24.45 – 24.65 GHz (USA)
K-band 24.05 – 24.25 GHz (INTL)

Field of View
120° Azimuth x 80° Elevation

Track Accuracy
< 1° Azimuth x < 1.5° Elevation

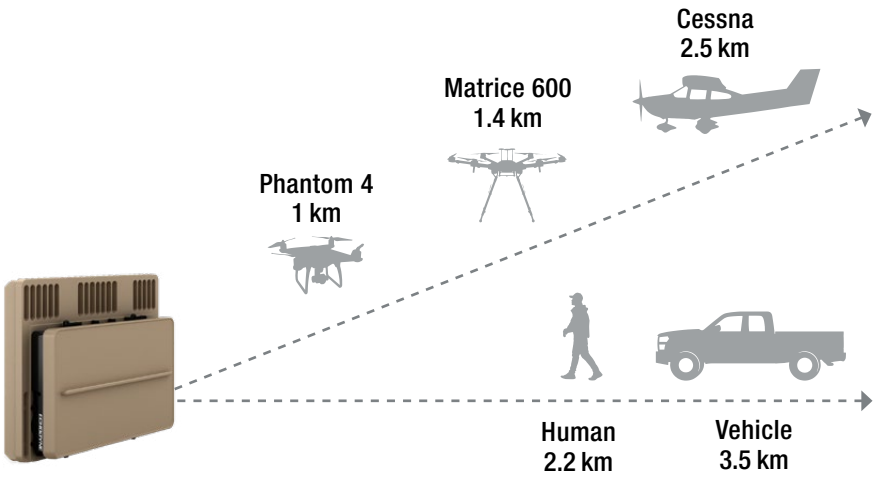
Track Update Rate
10 Hz

Size
20.3 cm x 16.3 cm x 5.7 cm

Weight
1.25 kg

Power
+ 15 to + 28 VDC

TYPICAL TRACKING RANGE (not maximum)



Learn More About EchoGuard →

EchoFlight®

4D Airborne Radar

Ultra-Low SWaP
Un/tethered Drone Surveillance
Drone Interceptor Applications

Lightweight Airborne CUAS

As drones become an ever-greater threat to warfighters and assets, novel methods for counter-UAS are required. EchoFlight is designed for use on airborne platforms and is customizable to mission requirements. For temporary missions, EchoFlight's field of view can be reduced for interceptor applications or kept broad for airspace surveillance. In either case, a low active emitter footprint on a mobile platform confuses enemy counterfire and maintains situational awareness.

RADAR SPECS

Frequency
K-band 24.45 – 24.65 GHz

Field of View
120° Azimuth x 80° Elevation

Track Accuracy
< 1° Azimuth x < 1.5° Elevation

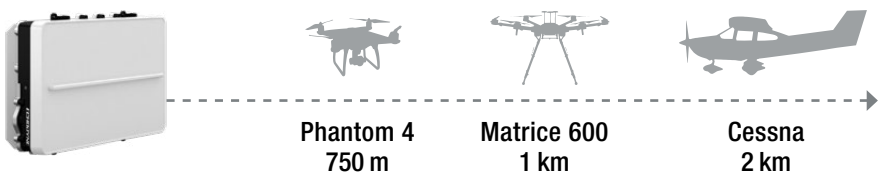
Track Update Rate
10 Hz

Size
18.7 cm x 12 cm x 4 cm

Weight
817 g (Natural Convection)

Power
+12 to +28 VDC

TYPICAL TRACKING RANGE (not maximum)



Learn More About EchoFlight ➞

EchoGuard CR®

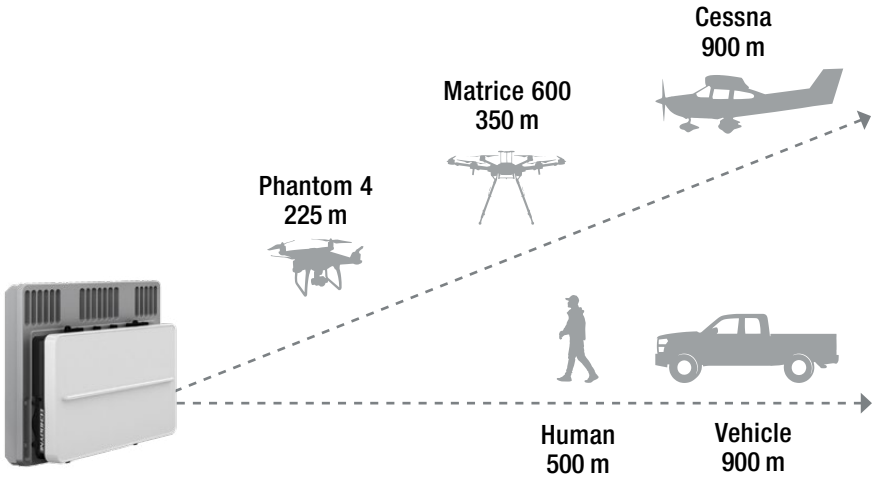
4D Surveillance Radar for Close Range

Guard Every Perimeter
Ground and Air
Accurate and Reliable

Close-Range Precision

Part of the EchoGuard family of 4D beamforming radars, EchoGuard CR is specifically built for performance in semi-urban, urban, and other close-range environments. EchoGuard CR's low-power signature maintains high performance by managing energy output to reduce signal clutter and reflection. EchoGuard CR rapidly and accurately detects and assesses multiple ground and air targets within the 120° azimuth and 80° elevation field of view. High-fidelity data for up to 20 simultaneous tracks includes latitude, longitude, range, velocity, bearing, closing time, and more. Standard TCP/IP Gigabit Ethernet connections and multiple data-rich output options available by API ease integration with other sensors and systems.

TYPICAL TRACKING RANGE (not maximum)



RADAR SPECS

Frequency
K-band 24.45 – 24.65 GHz

Field of View
120° Azimuth x 80° Elevation

Track Accuracy
< 1° Azimuth x < 1.5° Elevation

Track Update Rate
10 Hz

Size
20.3 cm x 16.3 cm x 5.7 cm

Weight
1.25 kg

Power
+12 to +30 VDC

Learn More About
EchoGuard CR ➞

Software & Support

MAXIMIZE RADAR PERFORMANCE

SOFTWARE UPDATES

Continuous Improvement from Software-Defined Radar

- Includes All Major and Minor Releases
- Improve Radar Operations
- Enhanced Classification
- Radar Data Visualization Tools
- Radar Support Tools

TECHNICAL SUPPORT

Priority Access to Radar Support

- Review and Training Sessions
- Systems Integration
- Troubleshooting
- Performance Review
- Planning

PRIORITY TECHNICAL SUPPORT

Priority queuing via company match when using support@echodyne.com.

CUSTOMER PORTAL

24/7 access to all tools, manuals, and materials.

PERFORMANCE ENHANCEMENT

Continuous improvements through software development.

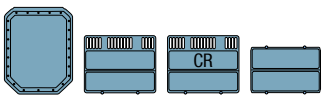
USER COMMUNITY

Submit requests for features and functionality.

Kits & Accessories

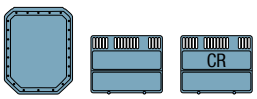
QUICK START KIT (QSK)

A ruggedized transport case with all the cables and accessories needed for typical integration and testing activities.



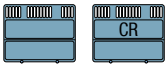
TOWER MOUNTING KIT

Radar mounting kit includes arms, brackets, and tools to configure and operate hemispherical ground and/or airspace surveillance for one to four radars.



RADAR HUB

Pre-engineered C2 solution for deployment, networking, and operations of multi-radar installations. Standardize every install and simplify support and maintenance.

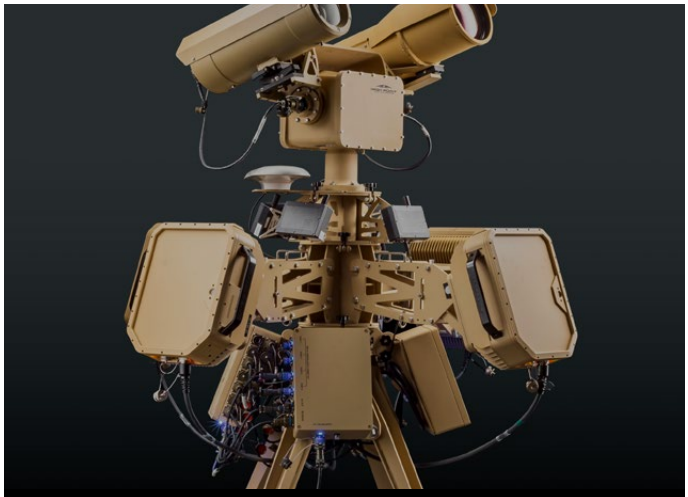


LIGHTWEIGHT DEPLOYMENT KIT (LDK)

A compact kit designed to carry all gear (radar, computer, tripod, batteries) in a backpack weighing less than 10 kg. LDK includes a rugged hard case for teams on the go.

Featured Applications

EchoShield radars configured for on-the-move (OTM) application.



Sawtooth Long-Range Counter-UAS system with EchoShield radars by High Point Aerotechnologies.

EchoGuard as primary sensor on highly portable ISR system.

EchoGuard as targeting sensor on EOS Titanis Counter-UAS system.

EchoShield radars on demonstration system, courtesy of OWT Global

Echodyne Corp.

Echodyne, the radar platform company, is a U.S. designer and manufacturer of advanced radar solutions for defense, government, and commercial market applications. The company's proprietary metamaterials electronically scanned array (MESA®) architecture is a rare breakthrough in advanced radar engineering, leveraging an innovative physics-design approach, Echodyne's MESA radars use standard materials and manufacturing processes to shatter unit cost barriers for high performance radar. The result is a solid-state, low-SWaP, exportable, commercial radar with advanced software capabilities that delivers superior performance, unparalleled data integrity, and exceptional situational awareness.

For more information, please visit: Echodyne.com.

U.S. Designed & Manufactured

AS9100D CERTIFIED ISO 9001

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