



RFHUNTER®

Signal Intelligence in the field



Product Description

RFHunter® is a passive Radio-Frequency (RF) direction-finding and monitoring system that provides signal detection and analysis, emitter direction finding, and geolocation capabilities. The system is lightweight, compact and easily deployable, designed for highly mobile but extremely accurate localisation of radio frequency emissions. It can be quickly deployed in a wide range of operational environments to provide real-time passive situational awareness to diverse tactical defence and security operations, either as a standalone tactical sensor or integrated with a wide range of Electronic Warfare platforms, command-and-control systems, and Battle Management Systems (BMS), enabling coordinated operations and enhanced situational awareness.

The operation of the direction-finding (DF) system is based on the accurate determination of the direction from which incoming radio signals originate. The DF antenna passively receives radio signals and, by analysing the phase and amplitude differences between the antenna elements, determines the direction of the signal source, commonly referred to as the signal bearing. A single bearing measurement indicates the direction of an emitter but does not provide its exact location. To geolocate an emitter, bearing measurements from two or more physically separated positions are combined through triangulation.

The operation of the system is done through the **RFHunter®** Command and Control (C2) application which runs on a ruggedised tablet and provides the operator's primary interface for mission planning, spectrum monitoring, data management, direction-finding operations and system configuration. The results are displayed graphically and numerically on the C2 application, enabling the operator to detect, analyse, and hear the signals, and identify the bearing and geolocation of the detected signal emitters.

These system capabilities enable a broad spectrum of applications that enhance situational awareness across defence, law enforcement, and security operations, including the detection, analysis, and geolocation of communication emitters, as well as the tracking and identification of transmitting crewed and uncrewed platforms, while its high portability, precision, and real-time performance make it a mission-critical asset for threat identification, spectrum dominance, and rapid operational response across the electromagnetic environment.

System Capabilities

- Fully passive operation — the system does not transmit and does not alert the emitter to its presence
- Real-time signal detection and bearing determination using correlative interferometry
- Emitter geolocation through triangulation, with estimated position displayed on a dynamic map
- Wide operating range of 30 MHz to 3,800 MHz
- Detection of burst and frequency-hopping signals
- Simultaneous detection and bearing of multiple signals across the operating spectrum
- Detectable signal types: CW, AM, FM, and SSB signals
- Automatic self-positioning and self-orientation without manual input
- Ruggedised tablet with Command and Control application displaying bearing lines on an interactive tactical map
- Three mission-specific DF antennas covering Low, Mid, and High frequency bands with quick-release antenna exchange in the field
- Designed for integration with a wide range of Electronic Warfare platforms, command-and-control systems, and Battle Management Systems
- Spectrum monitoring with real-time signal reception, demodulation, and audio output (*optional*)
- Multi-unit networking for collaborative emitter geolocation (*optional*)

Operational Scenarios



DF/COMINT Operations

Tactical direction finding and communications intelligence support



Special Forces Operations

Lightweight passive system for dismounted operations in harsh terrain



Coastal/Border Surveillance

Detect and localise unauthorised communications along borders and coastlines



RF Target Geolocation

Triangulate emitter positions from multiple bearing measurements



Illegal Interference Detection

Locate unlicensed or interfering transmitters disrupting communications



Automatic Threat Detection

Unsupervised continuous spectrum monitoring with automated alerting



Search and Rescue Operations

Bearings to distress beacons, handheld radios, and locator devices



Drone/UAS Direction Finding

Detect and localise drone operators; integration into CUAS systems

DF Sensor Module



Front View



Back View

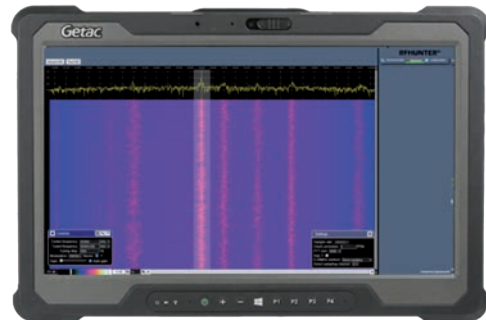
Command and Control Application

The RFHunter® C2 application runs on the ruggedised tablet and provides the operator's primary interface for mission planning, direction-finding operations, spectrum monitoring, data management, and system configuration.

DIRECTION FINDER



SPECTRUM MONITOR



- Mission-based scan workflow: wide-band survey to identify signals of interest, then narrow scan for precise bearing determination
- Targeted frequency watchlist for rapid monitoring of known signals of interest
- Single and continuous scan modes for one-time survey or persistent electromagnetic monitoring
- Real-time bearing results displayed as colour-coded lines on an interactive tactical map with live position tracking
- Real-time FFT spectrum display and waterfall spectrogram for electromagnetic environment survey and signal investigation
- Six demodulation modes (WBFM, NBFM, AM, USB, LSB, CW) with real-time audio output for aural signal assessment
- Configurable sample rate and FFT resolution for tailored signal analysis
- Operates on an independent hardware path — DF scan continues running in the background

Key Technical Features

DF SENSOR MODULE CHARACTERISTICS	
Detection Frequency Range	30 MHz to 3,800 MHz
Direction Finding Method	Correlative Interferometer
Scan Rate and Receiver Tuning Resolution	0.5 GHz/s with 1.8 kHz resolution
DF Accuracy	≤3° RMS* depending on operation conditions
DF Bandwidth	Selectable: 30.72 MHz, 15.36 MHz, 7.68 MHz, or 3.84 MHz
Detectable Signal Types	CW, AM, FM, SSB signals; burst and hopper signals
Shortest Detectable Signal	2.2 ms burst signal
Detectable Hopper Signal Rate	450 hops/second
Number of Signals Detectable	DoA of up to 2,048 signals simultaneously
Number of Channels	3 complex (I&Q) RF channels
ADC Sample Rate	61.44 MSPS
ADC Resolution	12 bits
Sensitivity	-85 dBm @ 10 MHz Bandwidth
Spurious Free Dynamic Range	70 dBc
AGC Dynamic Range	31 dB
Self-Orientation Sensing	Integrated tilt-compensated digital compass
Self-Positioning Sensing	Integrated multi-constellation GNSS receiver
GNSS Time Synchronisation	GNSS board clock synchronisation
Wireless Communication	Mesh network or other external communication readiness
Wired Communications	Ethernet 10/100 Mbps
Power Consumption / Autonomy	7 W; >10 hours continuous operation
Weight	<5 kg fully ruggedised (without antennas)
Dimensions (L x W x H)	200 x 165 x 90 mm

DF-ANTENNA SPECIFICATIONS	
Antenna Elements	5 omni-directional elements per each DF-antenna (4 switched, 1 fixed)
Full Frequency Coverage (Optional)	Three DF-Antenna configurations (Low, Mid, High Band)
Azimuth Coverage	360°
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature Range	-10°C to +50°C
Ingress Protection Rating	IP67
SYSTEM CAPABILITIES	
Emitter Geolocation	Triangulation from bearing measurements taken at successive positions, with estimated emitter location displayed on a dynamic map
Data Management	Mission-based organisation of direction-finding results with persistent storage, search by date and frequency range, and post-mission review
Multi-Unit Networking (Optional)	Collaborative emitter geolocation using multiple interconnected RFHunter® units via wireless mesh network. Available on request.
OPTIONAL SYSTEM CAPABILITIES	
Spectrum Monitoring	Add-on software-defined radio (SDR) receiver providing FFT spectrum display, waterfall spectrogram, tuning, demodulation, and signal analysis.

* Specified at 0° elevation in an open-field environment with adequate signal-to-noise ratio. DF accuracy may be influenced by operational conditions including signal elevation angle, multipath reflections, extreme signal-to-noise ratio, antenna levelling, and proximity to reflective surfaces.

RFHUNTER®

Configurations

RFHunter® supports multiple deployment configurations, each tailored to a specific operational context. The system's modular architecture and quick-release antenna interface enable rapid reconfiguration between deployment modes.

01



MANPACK

Lightweight, compact, scalable and easily deployable system designed for single-operator, on the march, highly mobile tactical operations.

02



TRIPOD-MOUNTED

Included in the standard manpack configuration and is designed for static deployment at fixed locations requiring continuous, unattended electromagnetic spectrum surveillance.

03



DRONE / UAV-MOUNTED

Extends operational capability to airborne platforms, enabling electromagnetic reconnaissance and emitter localisation from unmanned aerial systems. Integration-ready for multiple airborne platforms.

04



VEHICLE / TURRET-MOUNTED

Designed for integration onto manned and unmanned ground vehicles providing continuous electromagnetic situational awareness during both mobile and stationary operations.

05



BOAT / USV MOUNTED

Designed for maritime and riverine deployments, supporting situational awareness, coastal surveillance, port security, border monitoring operations, and critical infrastructure protection.

SignalGeneriX
ADVANCED SIGNAL SOLUTIONS

