

INTRODUCING THE RF SENSOR

RFEYE NODE



9 kHz – 40 GHz

Portable & rugged high-performance RF sensor for real-time
24/7 spectrum monitoring & geolocation of transmitters



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 **CRFS**

**EXTRAORDINARY
RF TECHNOLOGY**

RFEYE NODE AT A GLANCE

RFeye Nodes are state-of-the-art superheterodyne receivers designed to support military and commercial applications without physical, location, or infrastructure constraints. The RF sensors are ideal for high-performance ITU-compliant spectrum monitoring, military spectrum operations, signal analysis, and data streaming from 9 kHz – 40 GHz.

These fourth-generation high-performance RF sensors have in-built edge processing to reduce the bandwidth of backhaul data.

Automate wide area and close proximity signal monitoring, interference detection, identification, geolocation, and reporting.

Continuously monitor the spectrum in real-time 24/7. Record I/Q data with digital analysis for signal classification. Stream in Vita-49 for third-party demodulation.

BENEFITS



Intelligent RF sensor

High-performance, intelligent RF sensor with in-built edge processing, reducing backhaul data bandwidth.



Small, light, fast

RFeye Nodes can be deployed on masts, tripods, within building ceiling tiles, and as drone payloads for fixed, mobile and tactical in-field deployments.



RF recording (I/Q capture)

Record and capture in high fidelity. Stream wider signals high-definition I/Q for SIGINT.



Networked for multiple users & missions

Multiple users have multi-mission capabilities and can fully manage EMSO and user interaction.



Advanced signal intercept

Multi-stage pre-selection filtering and intelligent AGC support superior signal extraction in contested and noisy environments.



IP67-rated ruggedized against water & dust

Designed for outdoor deployment, RFeye Nodes operate in -30°C – +55°C environments.



Superior RF performance

Excellent phase noise, low noise figure, superb spurious free dynamic range, with FPGA technology and card design supporting integration and exploitation of the SDR and computer platform.



100 MHz IBW wideband RF monitoring

Quickly sweep from 9 kHz to 40 GHz with a high probability of intercept.



Easy installation, set-up, & operation

COTS optimized, RFeye technology is easy to connect and install and does not require recalibration.



Gateway to powerful software & APIs

CRFS hardware works with a software suite to monitor, capture, analyze, and geolocate signals of interest for complete spectrum visibility.



RFEYE NODE COMPARISON

ENTRY LEVEL SENSOR



RFEYE NODE 40-8

Competitively priced entry-level high-performance RF sensor for mobile spectrum monitoring and geolocation of transmitters up to 8 GHz (40 MHz IBW).

SIZE & WEIGHT (W, H, D)

Node (only)	200 x 50 x 130 mm 7.9 x 2.0 x 5.1 inches 2.1 kg (5 lbs)
+ noses / heatsinks	4.5 kg (10.7 lbs)

MID-RANGE SENSOR



RFEYE NODE 100-8

Entry-level high-performance RF sensor for mobile spectrum monitoring and geolocation of transmitters up to 8 GHz 100 MHz IBW).

SIZE & WEIGHT (W, H, D)

Node (only)	200 x 50 x 192 mm 7.9 x 2.0 x 7.6 inches 2.9 kg (6.4 lbs)
+ noses / heatsinks	5.8 kg (12.8 lbs)

MOST POPULAR SENSOR



RFEYE NODE 100-18

Portable and rugged high-performance RF sensor for wideband spectrum monitoring and geolocation of transmitters up to 18 GHz (100 MHz IBW).

SIZE & WEIGHT (W, H, D)

Node (only)	200 x 50 x 192 mm 7.9 x 2.0 x 7.6 inches 2.9 kg (6.4 lbs)
+ noses / heatsinks	5.8 kg (13.7 lbs)

40 GHz SENSOR

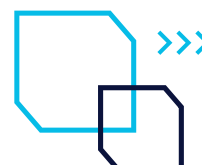


RFEYE NODE 100-40

High-frequency wideband RF sensor. Portable, rugged, and high-performance for real-time 24/7 spectrum monitoring and geolocation of transmitters up to 40 GHz (100 MHz IBW).

SIZE & WEIGHT (W, H, D)

Node (only)	200 x 50 x 192 mm 7.9 x 2.0 x 7.6 inches 3.5 kg (8 lbs)
+ noses / heatsinks	6.2 kg (13.7 lbs)



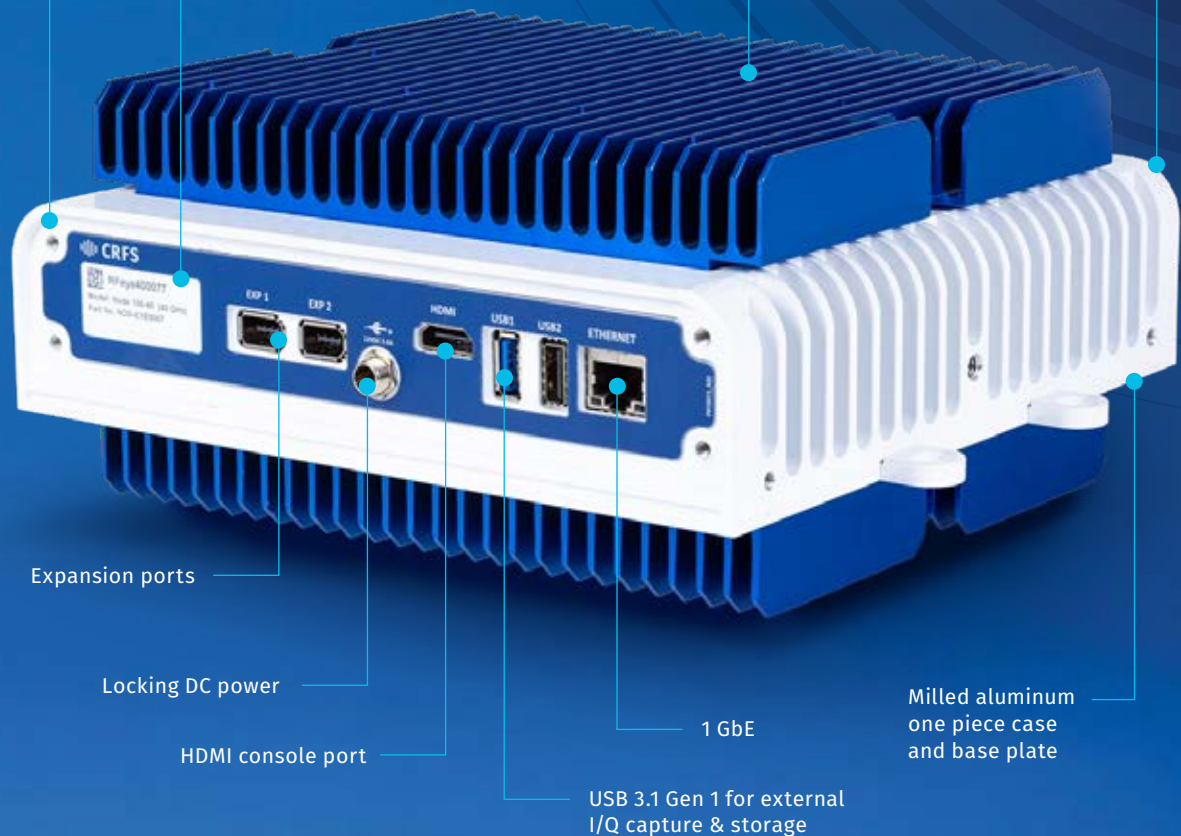
RFEYE NODE IN DETAIL

Ruggedized protection & anti-tamper fixings

Unique ID model & serial number

Graphite heatsink interface for excellent thermal transfer

Durable powder coat finish



Expansion ports

Locking DC power

HDMI console port

1 GbE

Milled aluminum one piece case and base plate

USB 3.1 Gen 1 for external I/O capture & storage

NOSES OR END PLATES

Noses or end plates are fitted on the front and back for outdoor deployments.

- ✓ Precision hex mount gasket weather seal
- ✓ Goretex Breather gland and altitude protection
- ✓ Cable strain-relief, and cable management



MIL-spec I/O connectors and SSD hatch



Weatherproof RF connectors



IP67-rated ruggedized against water & dust

All RFEYE Nodes are designed for outdoor deployment in extreme environments and operate between -30°C and $+55^{\circ}\text{C}$. The MIL-spec I/O connectors, weatherproof RF connectors and sealing gaskets provide IP67-rated protection

RFEYE NODE ADVANTAGES

100 MHz IBW wideband frequency monitoring

RFeye Nodes quickly sweep from 9 KHz to 40 GHz ensuring high probability of intercept. 100 MHz IBW ensures you never miss a signal and supports I/Q data capture. Smart attenuators reduce the power of an RF signal without appreciably distorting its wavelength, which is particularly useful to distinguish between close-in signals and noise. In any operating environment, users can more reliably automate wide area, close-proximity monitoring, interference detection, geolocation, and reporting.

Superior RF performance

RFeye Nodes use the latest superheterodyne RF technology, microwave components, and configuration for superior sensitivity, frequency stability, and selectivity. The in-built EDGE processing reduces backhaul bandwidth requirements. Excellent phase noise, low noise figure, and superb free spurious dynamic range is coupled with FPGA technology and card design, enabling easy integration and exploitation of the SDR and computer platform.

Small, light, fast

Now in its fourth generation, RFeye Nodes are optimized for SWaP (size, weight, and power). These RF sensors are designed to be more agile, mobile, powerful and to maximize functional density within constrained spaces. RFeye Nodes are renowned for their small form factor, fast and intelligent processing, and low power consumption. This makes them suitable for fixed, mobile, tactical in-field, and integration deployments.

Networked for multiple users and missions

One RFeye Node can be deployed to monitor multiple tasks. RFeye Nodes can also be networked, with multiple users and multi-mission capabilities, to effortlessly manage full EMSO (military and commercial) and user interaction. Networks can be joined together to provide wide area monitoring over an entire country or can be integrated into other networks, including Command and Control systems.

INTEGRATION & APIS

By leveraging CRFS' Application Programming Interface (APIs), customers can seamlessly integrate the capabilities of CRFS software into their proprietary systems, thereby automating tasks, which would otherwise have to be performed manually.

- EMP APIs allow users to manage non-synchronous tasks control on the Node, such as spectrum sweeps.
- GMP APIs allow users to manage synchronous tasks across multiple Nodes, such as geolocation.

CRFS APIs are designed with four key features that collectively enhance the usability, efficiency, and effectiveness of APIs in terms of system integration and communication.

- RESTful APIs use standard HTTP methods
- The JSON open data format allows interoperability between different systems and platforms
- Event streams allow for real-time data processing and notifications
- Clear schemas allow APIs to be easily integrated into larger systems



MAXIMUM PERFORMANCE & FLEXIBILITY

RFeye Nodes can be deployed in the following ways:

Outdoors



Outdoor kits



Fixed masts / towers



Tripods



DF / RFeye Array



Ships & USVs

Tactical & mobile



RFeye Stormcase



RF recorders



V-Track

Airborne



Fixed wing drones



Rotary drones



Tethered drones



Tethered balloons

In-building



TSCM



Data centres



SCIFs



VISIT OUR DEPLOYMENT LIBRARY

Our online deployment stories library showcases CRFS' expertise across multiple domains and sectors.



A GATEWAY TO POWERFUL SOFTWARE

All CRFS customers have access to software to monitor, capture, analyze, geolocate, and report signals of interest. Our complimentary software suite provides teams with the tools to achieve complete spectrum visibility.



RFEYE SITE Real-time spectrum monitoring & geolocation toolkit

- Desktop application including all the essential functionality needed for full spectrum operations, turning spectrum data into RF intelligence
- Features include: Real-time spectrum visualization; geolocation (PoA, AoA, TDoA, 3D TDoA, Hybrid), spectrum monitoring, I/Q data (capture, stream, visualize), propagation modelling tool; simulation and training engine, spectrum overlays and spectrum measurements



RFEYE MISSION MANAGER Automated spectrum management & near-time incident reporting

- Desktop application allowing technical and non-technical operators to automate EMSO missions set up in RFEYE Site
- Features include: Clear views of the RF environment, visualizations of authorized transmitters, operating zones, geofencing, incidents and alarms; signal detectors, network status and diagnostics; I/Q capture; spectrum monitoring; geolocation; schedule scans, tasks, sweeps, surveys and reports
- Automate and manage multi-user, multi-mission tasks, with ease

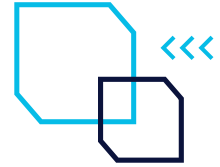


RFEYE DEEPCVIEW Forensic signal analysis software with 100% probability of intercept

- Developed for signal analysts, EW, SIGINT and RF Test Engineers, an easy user interface makes it accessible to non-technical RF operators too
- Long duration wideband I/Q recording, analyse, replay and export signal fragments for DEMOD. 'On-the-fly' signal analysis enables unique spectrum situational awareness and intelligence
- Features include: Live-preview mode; I/Q snippet output; statical signal analysis and isolation; signal exploration and visualization; I/Q analysis; full dataset spectrogram; query signals; stream in VITA-49



RFEYE NODE SPECIFICATIONS



	RFEYE 40-8	RFEYE 100-8	RFEYE 100-18	RFEYE 100-40
Frequency range	9 kHz - 8 GHz	9 kHz - 8 GHz	9 kHz - 18 GHz	9 kHz - 40 GHz
Noise figures at maximum sensitivity	6-10 dB typical	6-10 dB typical	7-21 dB typical	8.5-16 dB typical
Phase Noise at 1 GHz (20 kHz offset)	-110 dBC/Hz	-130 dBC/Hz	-126 dBC/Hz	-126 dBC/Hz
Instantaneous bandwidth (IBW)	40 MHz	100 MHz	100 MHz	100 MHz
Sweep rate	245 GHz/s	280 GHz/s	390 GHz/s	232 GHz/s
Node weight (ex noses / heatsink)	2.1 kg (5 lbs)	2.9 kg (6.4 lbs)	2.9 kg (6.4 lbs)	3.5 kg (8 lbs)



RESOURCES

Discover educational white papers, webinars, videos, product brochures, and data sheets.



SIGN UP FOR CRFS NEWS & CONTENT

Receive tailored content directly to your inbox.



TALK WITH AN EXPERT

Discuss your RFeye Node deployment requirements.

CRFS

CRFS is an RF technology specialist for defense, national security agencies and systems integration partners. We provide advanced capabilities for real-time spectrum monitoring, situational awareness and electronic warfare support to help our customers understand and exploit the electromagnetic environment.