



TACTICAL DIRECTION FINDING

COMPACT DF HEAD SYSTEMS & RAPID DEPLOYMENT KITS

(30MHz to 40GHz)



EXTRAORDINARY
RF TECHNOLOGY

MONITOR, INTERCEPT & GEOLOCATE SIGNALS WITH COMPACT, HIGH-PERFORMANCE, INTERCHANGEABLE DF HEAD SYSTEMS



CRFS' Compact Direction Finding (DF) Heads are lightweight, modular systems designed for spectrum monitoring, SIGINT, COMINT, and ESM operations. They are fully interoperable with CRFS' V-Track vehicle solution, can be deployed as part of heterogeneous distributed sensor networks, and support missions ranging from signal detection and interception to precise geolocation and intelligence gathering.

Each DF Head is interchangeable with Rapid Deployment Kits (RDKs), enabling rapid reconfiguration for mission-specific needs. Operating with a 100 MHz instantaneous bandwidth, the system performs real-time scanning, detection, DF, and recording across a wide frequency range: from 30MHz to 40GHz.

These systems operate with RFeye Nodes (RF sensors) and CRFS' specialist software, allowing them to deliver highly accurate DF performance, even in congested and contested RF environments.

Multiple DF Heads can be networked with manned and unmanned systems to support 2D and 3D TDoA, Angle of Arrival (AoA), and hybrid geolocation techniques.

Key features

- High bearing accuracy: <2.5° RMS typical
- Interoperable: Fully compatible with all RFeye Nodes and CRFS' V-Track vehicle solution
- Fast performance: Fast signal scanning and direction finding
- Advanced signal detection: Capable of detecting and intercepting modern signal types including frequency-hopping, agile, and burst transmissions
- Wideband coverage: Direction finding and geolocation from 30MHz to 40GHz
- Real-time and post processing: DF results can be viewed in real time or captured for analysis in post processing
- Advanced geolocation techniques: Supports AoA, TDoA, and 3D TDoA
- Modular and scalable: Interchangeable RFeye Nodes, Compact DF Heads and Rapid Deployment Kits (RDKs)
- Varied mast heights: RDKs have three mast height options: 2m, 6m, or 10m
- Software ecosystem: RFeye Site for real-time operations; RFeye DeepView for post-processing and signal analysis
- Built on experience: Backed by over 15 years of expertise using Watson-Watt and computational direction finding techniques



Spectrum monitoring antenna

- Spectrum monitoring with passive monitoring antennas
- 10MHz to 18/40GHz
- Compatible with any RFeye Node



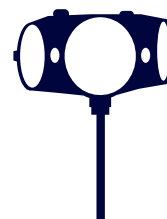
VHF/UHF Direction Finding antenna (DFH500)

- Spectrum monitoring with passive Compact DF Head
- 30MHz to 500MHz
- Compatible with any RFeye Node



UHF/SHF Direction Finding antenna (DFH18)

- Spectrum monitoring with passive Compact DF Head
- 500MHz to 18GHz
- Use RFeye Node Plus for SIGINT



UHF/SHF Direction Finding antenna (DFH40)

- Spectrum monitoring with passive Compact DF Head
- 500MHz to 40GHz
- External RFeye Node 100-18/100-40 required

OPERATIONAL CHALLENGES & DF HEAD SOLUTIONS

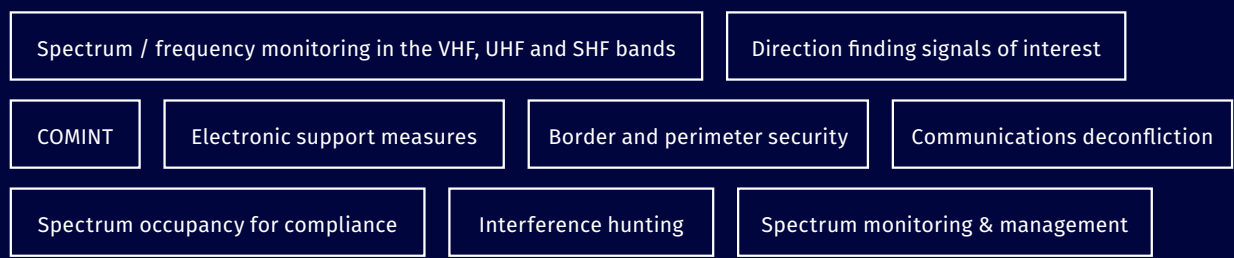
Operational challenges

- Operating close to the Forward Edge of Battle Area (FEBA)
- Addressing coverage blind spots in existing RF monitoring infrastructure
- Conducting short-term or temporary surveillance
- Performing short-duration DF or interference hunting missions
- Supporting national security operations
- Delivering tactical EW capability in environments with constrained infrastructure
- Augmenting existing TDoA and AoA sensor networks
- Providing ISR and Electronic Support (ES) coverage dynamically

Compact DF Head solutions

- Seamless system integration**
Fully compatible with all RFeye Nodes.
- Mission-specific frequency coverage**
Interchangeable Compact DF Head options (30-500MHz, 500MHz-18GHz, 500MHz-40GHz) allow operators to tailor deployments to specific signal environments.
- Flexible field deployment**
Rapid Deployment Kits (RDks) offer multiple mast height options, enabling operators to adapt quickly to line-of-sight requirements or tactical constraints.
- Proven direction-finding expertise**
Built on over 15 years of innovation with Watson-Watt and computational DF technology.
- Rugged and persistent**
Rugged, weather-resistant design supports operation in harsh environments—for missions lasting from a few hours to several weeks.

Mission types for Compact DF Head Systems





RUGGED SYSTEMS DESIGNED FOR TACTICAL FLEXIBILITY



Tactical and compact

- Designed for temporary missions with limited or no infrastructure
- One- or two-person deployment in under 20 minutes
- Rapid Deployment Kits (RDks) available
- Tool-less setup for quick field installation



Lightweight and self-sustaining

- 2m Rolatube mast made from UV-resistant nylon fabric; 2m, 6m and 10m BlueSky Mast alternatives constructed from aerospace-grade aluminum alloy
- Battery-powered using Bren-Tronics systems with optional solar mat for extended missions
- Ideal for short-term operations in remote areas
- Small, lightweight rugged transit cases for easy transport



Ruggedized (RDks)

- Mast systems rated to withstand wind speeds up to 100 km/h (62 mph)
- Fully water- and dust-proof (IP67 rated)
- Maintenance-free design suitable for extended field deployments



RAPID DEPLOYMENT KIT

SPECTRUM MONITORING ANTENNA

10MHz to 18/40GHz

Spectrum monitoring with passive monitoring antennas

Rapid Deployment Kit (in image below) includes

2m Rolatube mast system, Power-Data-Distribution Module, mounting brackets and fixings, RF and power cables with color coding and numbering, Bren-Tronics battery box (empty), solar panel, Pelicase.

RFeye Node shown below: RFeye 100-18 with noses for IP67 (green).

Optional extras

CRPA antenna, Silvus MANET radio (backhaul), Starlink (backhaul), Bren-Tronics batteries x 6, ruggedized laptop, RFeye DeepView software for I/Q analysis and RFeye Mission Manager, and open APIs allowing system integrators to control and obtain data results from the DF sub-system.



Requires RFeye Site software:

Real-time monitoring and geolocation



Compatible with the following

RFeye Nodes: 100-8, 100-18, 100-18 Node Plus (for SIGINT), 100-40





Fixed &
tactical options
available



COMPACT DF HEAD RANGE

VHF/UHF DIRECTION FINDING ANTENNA (DFH500)

30MHz to 500MHz

Spectrum monitoring with passive DF antennas

Rapid Deployment Kit (in image above) includes 6m BlueSky Mast system, Power-Data-Distribution Module, mounting brackets and fixings, guy ropes, RF and power cables with color coding and numbering, Bren-Tronics battery box (empty), solar panel, Pelicase.

RFeye Node shown above: RFeye 100-18 with noses for IP67 (green).

Optional extras

CRPA antenna, Silvus MANET radio (backhaul), Starlink (backhaul), Bren-Tronics batteries x 6, ruggedized laptop, RFeye DeepView software for I/Q analysis and RFeye Mission Manager, and open APIs allowing system integrators to control and obtain data results from the DF sub-system.



Requires RFeye Site software:
Real-time monitoring
and geolocation



**Compatible with the following
RFeye Nodes:** 100-8, 100-18, 100-18
Node Plus (for SIGINT), 100-40



COMPACT DF HEAD RANGE

UHF/SHF DIRECTION FINDING ANTENNA (DFH18)

500MHz to 18GHz

Spectrum monitoring with passive DF antennas

Rapid Deployment Kit (in image below) includes 6m BlueSky Mast system, Power-Data-Distribution Module, mounting brackets and fixings, guy ropes, RF and power cables with color coding and numbering, Bren-Tronics battery box (empty), solar panel, Pelicase.

RFeye Node shown below: RFeye 100-18 with noses for IP67 (green).

Optional extras

CRPA antenna, Silvus MANET radio (backhaul), Starlink (backhaul), Bren-Tronics batteries x 6, ruggedized laptop, RFeye DeepView software for I/Q analysis and RFeye Mission Manager, and open APIs allowing system integrators to control and obtain data results from the DF sub-system.



Requires RFeye Site software:
Real-time monitoring
and geolocation



**Compatible with the following
RFeye Nodes:** 100-18, 100-18 Node
Plus (for SIGINT), 100-40

Available
in late 2025





Available
in late 2025



COMPACT DF HEAD RANGE UHF/SHF/EHF DIRECTION FINDING ANTENNA (DFH40)

500MHz to 40GHz

Spectrum monitoring with passive DF antennas

Rapid Deployment Kit (in image above) includes 6m BlueSky Mast system, Power-Data-Distribution Module, mounting brackets and fixings, guy ropes, RF and power cables with color coding and numbering, Bren-Tronics battery box (empty), solar panel, Pelicase.

RFeye Node shown above: RFeye 100-18 with noses for IP67 (green).

Optional extras

CRPA antenna, Silvus MANET radio (backhaul), Starlink (backhaul), Bren-Tronics batteries x 6, ruggedized laptop, RFeye DeepView software for I/Q analysis and RFeye Mission Manager, and open APIs allowing system integrators to control and obtain data results from the DF sub-system.



**Compatible with the following
RFeye Nodes:** 100-18, 100-18 Node
Plus (for SIGINT), 100-40



Requires RFeye Site software:
Real-time monitoring
and geolocation

SPECTRUM MONITORING & DF HEAD SYSTEMS



	FREQUENCY RANGE	POLARIZATION	DF BANDWIDTH	DF ACCURACY
Spectrum monitoring antenna	10MHz to 18/40GHz	Vertical	100MHz IBW	Vertical
DFH500 DF antenna	30MHz to 500MHz	Vertical	100MHz IBW	<2.5° RMS typical
DFH18 DF antenna	500MHz to 18GHz	Any Linear	100MHz IBW	<2.5° RMS typical
DFH40 DF antenna	500MHz to 40GHz	Any Linear	100MHz IBW	<3° RMS typical

RFEYE NODE



	FREQUENCY RANGE	NOISE FIGURES AT MAXIMUM SENSITIVITY	PHASE NOISE AT 1GHZ (20KHZ OFFSET)	SWEEP RATE	GNSS BANDS
RFeye Node 100-8 (green or white)	9kHz to 8GHz	6-10 dB typical	-129 dBc/Hz	280 GHz/s	L1
RFeye Node 100-18 (green or white)	9kHz to 18GHz	6-17 dB typical	-129 dBc/Hz	390 GHz/s	L1
RFeye Node Plus 100-18 (green or white)	9kHz to 18GHz	6-17 dB typical	-129 dBc/Hz	390 GHz/s	L1 & L2, L1 & L5
RFeye Node 100-40 (green or white)	9kHz to 40GHz	8-18 dB typical	-129 dBc/Hz	232 GHz/s	L1

	GNSS DENIED ENVIRONMENTS	LOCAL I/Q STORAGE BANDWIDTH (SUSTAINED GAPLESS I/Q DATA)	I/Q STREAMING BANDWIDTH (SUSTAINED GAPLESS I/Q DATA)	IO INTERFACE
RFeye Node 100-8 (green or white)	Yes	25 MHz*	12.5 MHz*	1GigE
RFeye Node 100-18 (green or white)	Yes	25 MHz*	12.5 MHz*	1GigE
RFeye Node Plus 100-18 (green or white)	Yes	100 MHz	100 MHz (550 MBps / 4 Gbps)	2.5GigE / 10GigE SFP
RFeye Node 100-40 (green or white)	Yes	25 MHz*	12.5 MHz*	1GigE

* RFeye Nodes can record / stream 100 MHz I/Q data for a small number of seconds (not sustained gapless). RFeye Node Plus 100-18 can record / stream 100 MHz I/Q data for hours

RAPID DEPLOYMENT KIT (RDK) MAST SYSTEMS



	LIGHTWEIGHT (2 METERS): ROLATUBE	INTERMEDIATE (2 METERS): BLUESKY MAST AL1	HEAVYWEIGHT (6 METERS): BLUESKY MAST AL2	HEAVYWEIGHT (10 METERS): BLUESKY MAST AL2
Construction material	Composite UV resistant nylon fabric	Aerospace-grade aluminum alloy	Aerospace-grade aluminum alloy	Aerospace-grade aluminum alloy
Max height (inc DF Head & antenna)	4 meters	4 meters	8 meters	12 meters
Tripod / mast load capacity	40kg (88 lbs)	22kg (50 lbs)	27kg (59 lbs)	22kg (48 lbs)
Wind rating	100km/h (62 MPH)	100km/h (62 MPH)	100km/h (62 MPH)	100km/h (62 MPH)
Deployment time	<10 mins	<10 mins	<20 mins	<20 mins
People to deploy	1	1	2	2
Testing to	MIL-STD810H	MIL-STD810G	MIL-STD810G	MIL-STD810G
Fast elevation system	Yes	Yes	Yes	Yes
Colour	Black or green	Black	Black	Black
Compass & bubble	No	Yes	Yes	Yes
Environmental	Water & dust proof. Maintenance free	Water & dust proof. Maintenance free	Water & dust proof. Maintenance free	Water & dust proof. Maintenance free

FURTHER READING



COMPACT DF HEAD OVERVIEW

Learn how Compact Direction Finding Head Systems combine high-precision direction finding (AoA, TDoA) with wideband spectrum monitoring in a rugged, tactical format.



RADIO DIRECTION FINDING FOR FIXED & MOBILE DEPLOYMENTS: RFEYE ARRAY



RADIO DIRECTION FINDING TECHNIQUES & APPLICATIONS FOR EW AND SIGINT



EXTRAORDINARY RF TECHNOLOGY

CRFS creates deployable technology to detect, identify and geolocate signals in complex RF environments. With a leading position in the US, Europe and a global reach, our systems are used worldwide by regulatory, military, system integrators, government security agencies and corporates. They require actionable spectrum intelligence across the widest possible frequency range, in both congested and contested environments. They rely on our highly sensitive RF sensors, accurate transmitter geolocation, signal captures, classification and real-time RF intelligence to fulfil EMSO and electronic warfare support missions.



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