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DF Commander MK2

Software for the remote control,
monitoring and integration of radio
direction finder systems into
professional ATC network architectures

Talk on the air? We've got the Where!

The Leader in DF

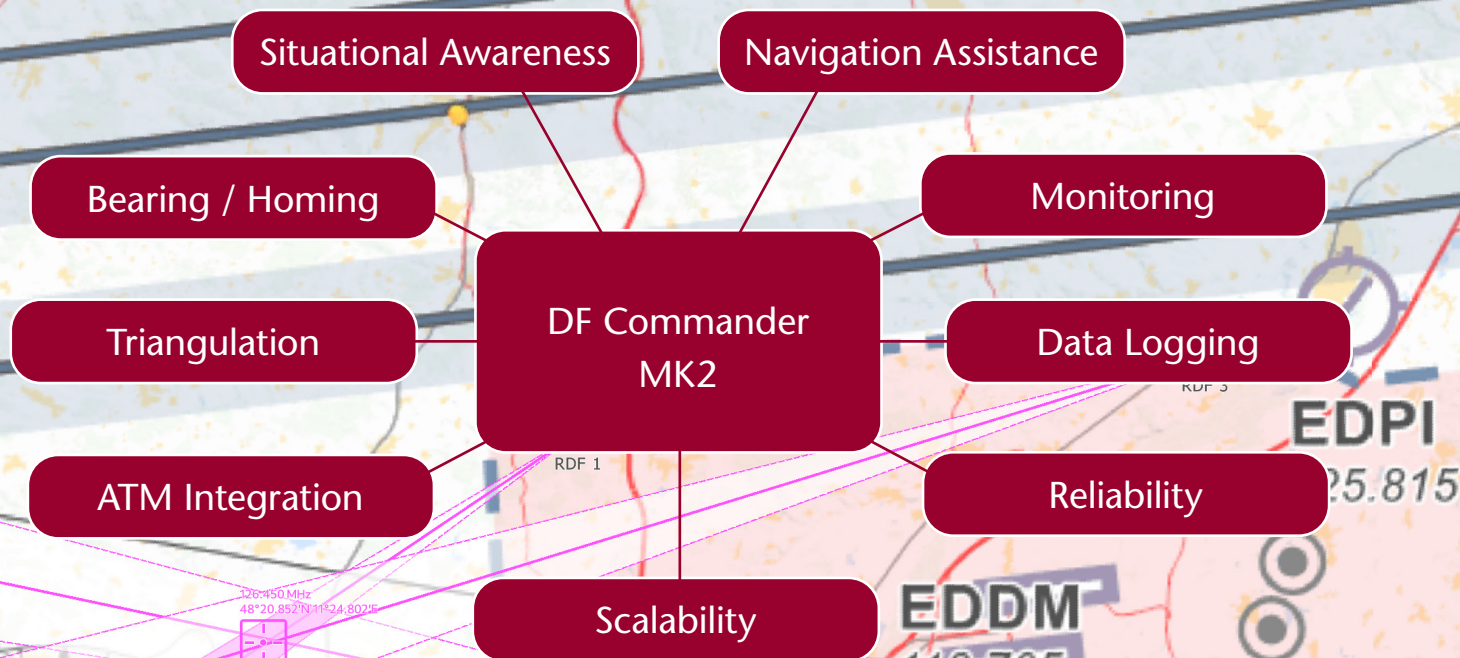
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Elektronik GmbH

THETA



DF Commander MK2

All features at a glance

■ Situational Awareness

Enhancing air traffic controllers' ability to quickly identify and track transmitting aircraft, improving operational efficiency and safety

■ Bearing Data Visualization

Real-time display of bearing results on interactive electronic maps, improving controller awareness and decision-making.

■ Triangulation & Aircraft Positioning

Automated cross-bearing calculations from multiple RDF stations for highly accurate aircraft localization, enhancing air traffic safety.

■ ATM System Integration

Seamless connectivity with ATC infrastructure via ASTERIX format conversion and standardized JSON-based RDF protocols.

■ Scalability & Flexible Deployment

Adaptable from a single RDF station to a nationwide ATC RDF network, allowing easy expansion and modular system upgrades.

■ Logging & Event Replay

Comprehensive logging of RDF data and system activities, enabling post-event analysis, incident investigations, and operator training.

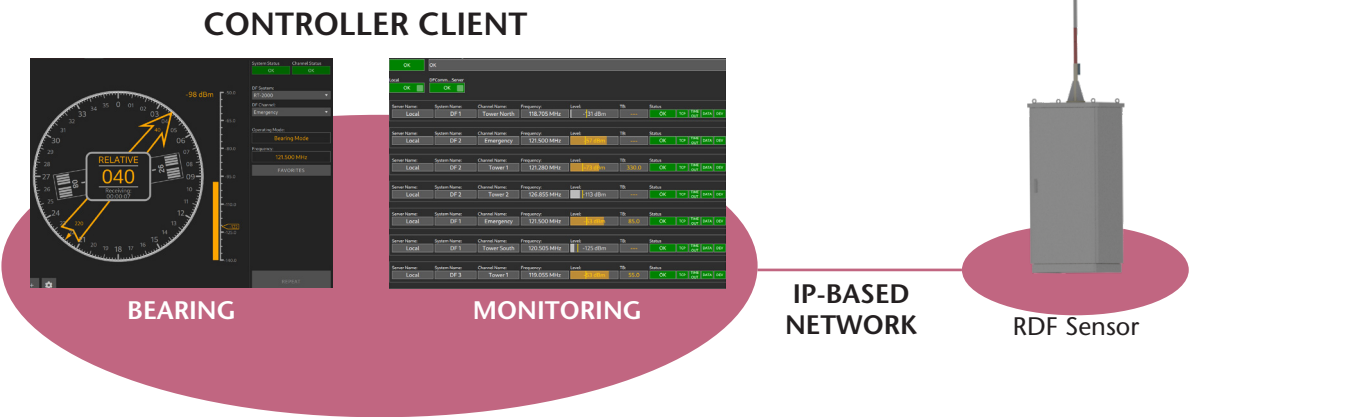
■ EUROCAE ED-153 Certified

Ensuring Compliance and Reliability

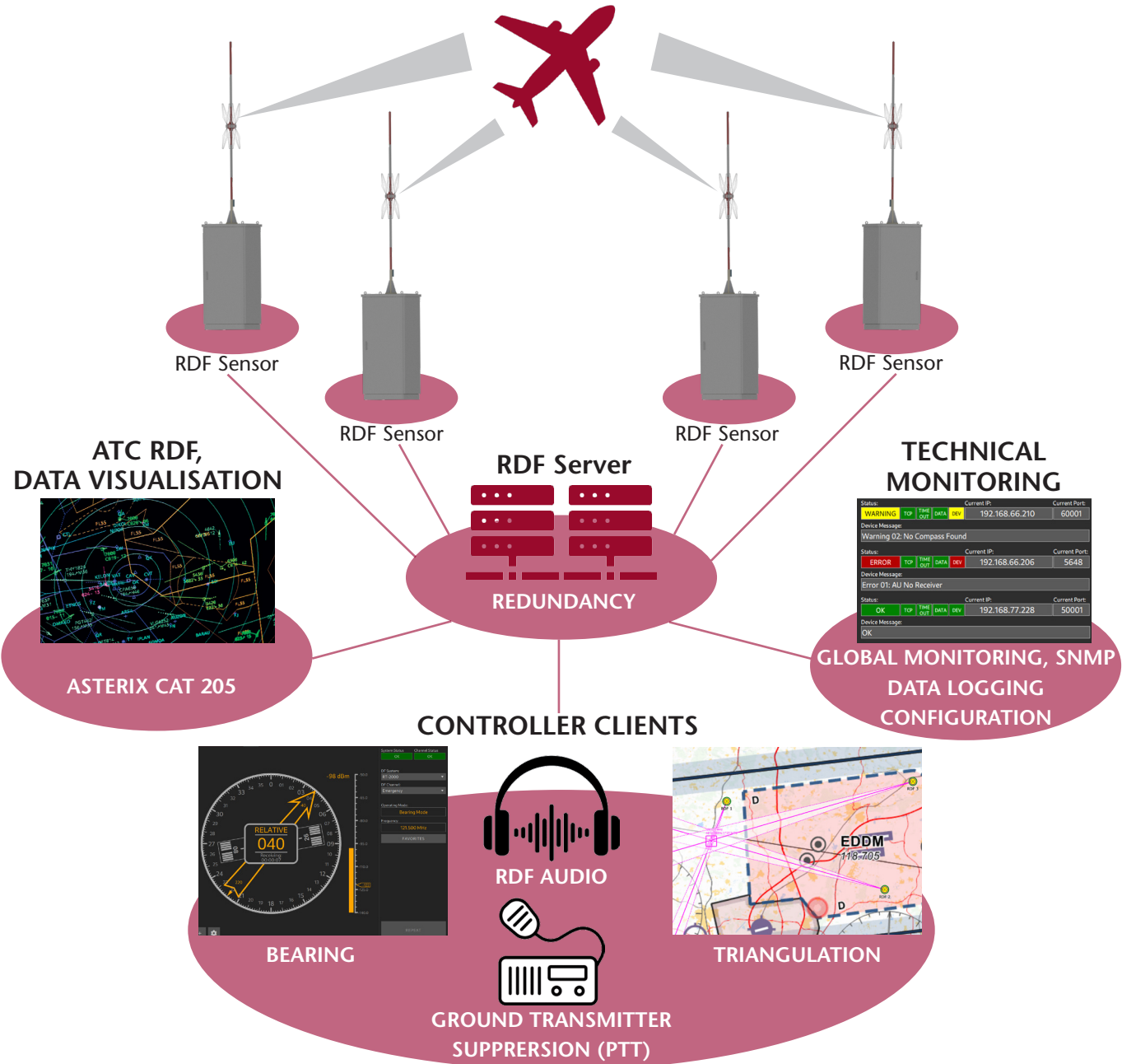
The Leader in DF

DF Commander MK2 covers RDF solutions...

...for small airports...



...up to country-wide RDF networks.



Benefits of Radio Direction Finding in Air Traffic Management

Increase Controller Situational Awareness

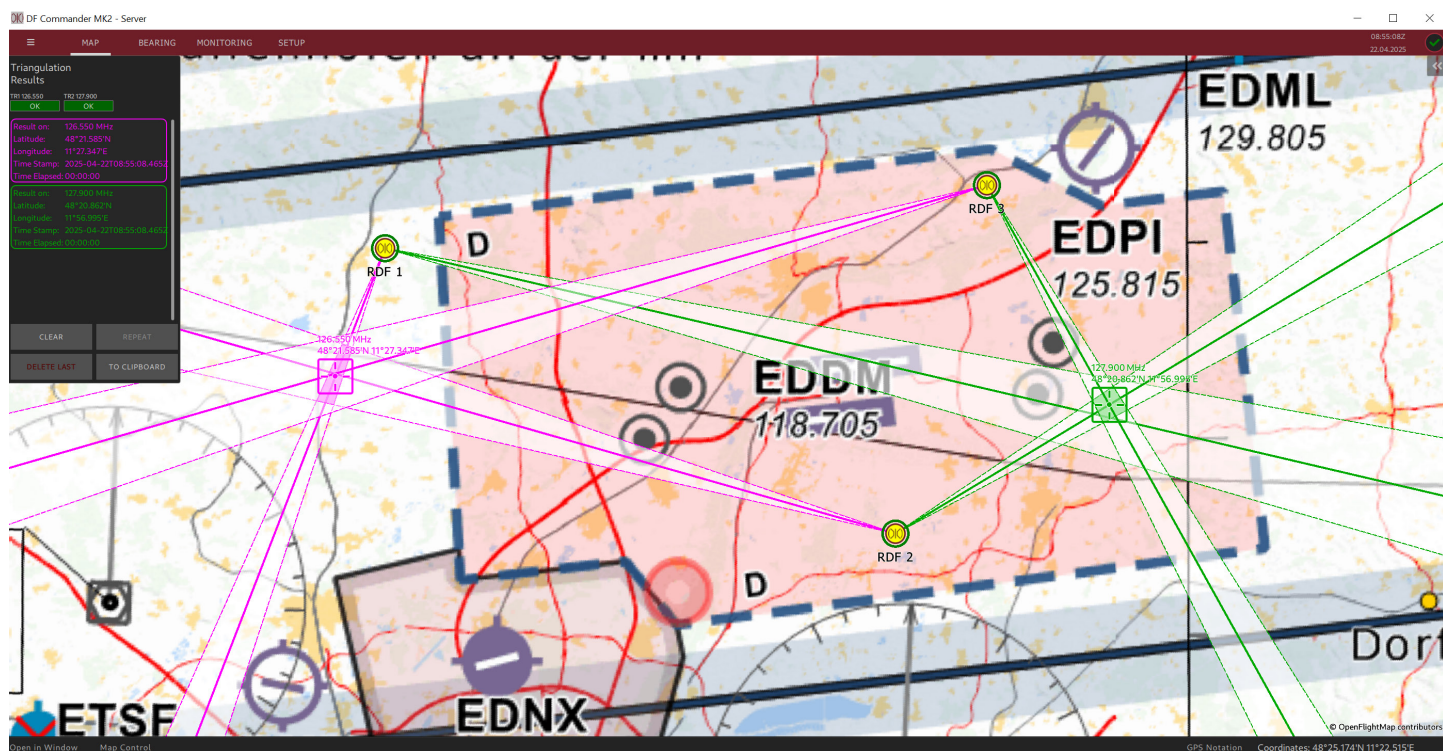
Air traffic controllers in approach or area control centers depend on auditory identification of aircraft call-signs to associate them with radar targets. While radar and other surveillance systems provide detailed flight information, they do not identify the aircraft transmitting the signal. As a result, recognizing call-signs remains the primary method for identifying communicating aircraft. With increasing air traffic and the growing workload on controllers, simplifying identification processes is essential to allow controllers to focus on higher-priority tasks.

RDF systems enhance efficiency by determining the direction of arrival and geographic location of transmitting aircraft based on their radio signals. This information is automatically displayed as bearing lines and precise locations on the radar screen, making identification faster and more intuitive.

Avoid Call-Sign Confusion

Growing air traffic density and a shortage of personnel create significant challenges for air traffic controllers. Factors like similar call-signs and poor audio quality often demand extra attention, adding to the stress and workload.

RDF systems automatically display the direction and location of transmitting aircraft on the radar screen, reducing call-sign confusion and saving valuable time. By streamlining the identification process, RDF systems improve safety and assist in quickly resolving misunderstandings and readback errors.



Assist in Navigation

When an aircraft is lost or disoriented, air traffic controllers can use RDF systems to determine the direction of the aircraft's communication signal, aiding in identifying its location and bringing home lost airplanes by providing QDM.

This technology is particularly valuable for smaller airports without radar coverage. RDF provides a cost-effective solution for improving situational awareness, verifying pilot reports, supporting navigation, and ensuring safe operations.

Provide a Backup Solution

In emergencies such as GPS navigation failures, transponder malfunctions, or situations where an aircraft cannot or does not want to provide its position, RDF systems play a crucial role by identifying an aircraft's location through its radio transmissions. This enables controllers to effectively guide the aircraft, ensuring safety during critical situations.

Save Lives

RDF systems continuously monitor all radio transmissions, including those from aircraft not detected by conventional surveillance systems. The ability to determine the location of transmitting aircraft (e.g., on an ELT frequency) is vital for search and rescue operations, providing critical support in life-saving situations.

Detect Interfering Transmissions

Interference at airfields can disrupt communication, navigation, and air traffic operations, posing risks to safety and efficiency. RDF systems can identify unauthorized or malfunctioning transmissions, such as equipment emitting unintended signals, environmental interference affecting communication channels, and accidentally activated ELT beacons. Once interference is detected, RDF systems can precisely locate the source, enabling swift action to eliminate the issue and maintain operational integrity.

Main Features of DF Commander MK2

Scalable Solution for Geolocation and Direction Finding

The DF Commander MK2 offers a flexible and scalable approach to radio direction finding, tailored to meet user needs. From a single direction finder to an expansive countrywide geolocation network, the system can grow seamlessly with the addition of units and location servers. Configurable options include support for multiple frequency channels, customizable display modes, and integration with existing systems, ensuring adaptability for both local and regional air traffic control.

Visualizations

An intuitive interface allows operators to visualize bearing and cross-bearing results directly on electronic maps, simplifying situational assessment and enabling well-informed decision-making. The system supports integration with various map formats, such as OpenFlight and OpenTopo, ensuring compatibility with user preferences and workflows.

Remote Control and Monitoring

Effortlessly manage and monitor RDF systems with DF Commander MK2s advanced remote access capabilities. Real-time monitoring of system status, bearing data, triangulation results, and overall health is accessible from any location. The system also includes an SNMP interface, enabling seamless integration with external monitoring tools for enhanced operational oversight.

Advanced Logging & Replay Capabilities

DF Commander MK2 offers comprehensive logging features to support operational transparency, diagnostics, and analysis. The system records error and warning events, tracks all configuration changes, and logs RDF and system data in real time. Additionally, the integrated situational replay function enables post-event reconstruction for training, investigation, and quality assurance.

Integration and Compatibility

Seamlessly integrate DF Commander MK2 into your existing air traffic management systems. Built on the ASTERIX CAT205 open standard interface, the system ensures compatibility and vendor independence. RHOTHETA also supports the development of legacy protocols, allowing for straightforward replacement of outdated direction finders without disruption.

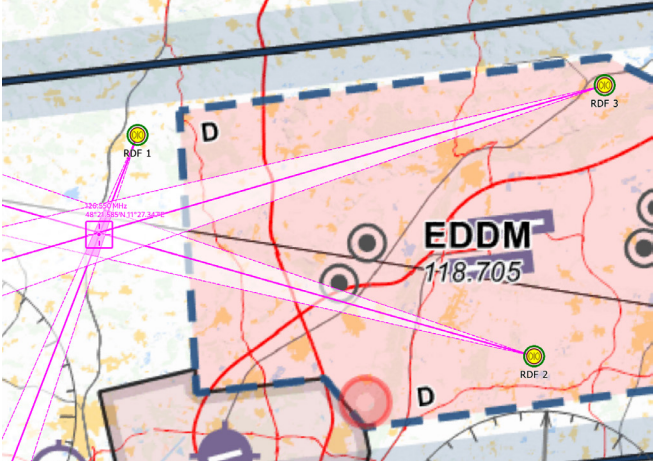
Configuration and Maintenance

The system features user-friendly configuration tools for quick setup and customization, tailored to meet specific operational requirements. With the ability to log all events for analysis and troubleshooting, alongside streamlined maintenance tools, remote access capabilities, and detailed diagnostics, DF Commander MK2 ensures optimal performance and minimizes downtime.

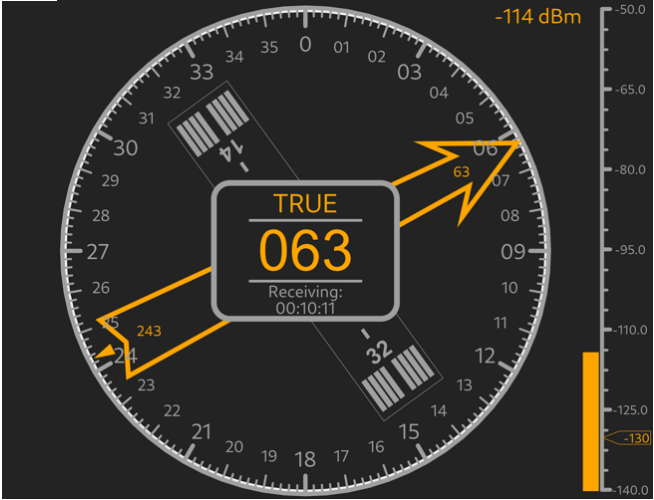
Safety and Security

Developed in compliance with ICAO Annex 10 and EUROCAE ED-153 guidelines, DF Commander MK2 adheres to the highest standards of safety and reliability for air traffic management operations. Advanced security features safeguard system integrity and protect against unauthorized access, ensuring robust and secure performance in any environment.

Triangulation



Bearing



Monitoring

General Status	General Message
OK	OK
Local	DFComm-Server
OK	OK
Server Name: Local	System Name: DF 1
Channel Name: Tower North	Frequency: 118.705 MHz
Level: -31 dBm	TB: ---
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 2
Channel Name: Emergency	Frequency: 121.500 MHz
Level: -57 dBm	TB: ---
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 2
Channel Name: Tower 1	Frequency: 121.280 MHz
Level: -73 dBm	TB: 330.0
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 2
Channel Name: Tower 2	Frequency: 126.855 MHz
Level: -113 dBm	TB: ---
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 1
Channel Name: Emergency	Frequency: 121.500 MHz
Level: -31 dBm	TB: 85.0
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 1
Channel Name: Tower South	Frequency: 120.505 MHz
Level: -125 dBm	TB: ---
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 3
Channel Name: Tower 1	Frequency: 119.055 MHz
Level: -53 dBm	TB: 55.0
Status: OK	TCP TIME OUT DATA DEV
Server Name: Local	System Name: DF 3
Channel Name: Tower 2	Frequency: 119.055 MHz
Level: -33 dBm	TB: 60.0
Status: OK	TCP TIME OUT DATA DEV

Status

Status:	Current IP:	Current Port:
WARNING TCP TIME OUT DATA DEV	192.168.66.210	60001
Device Message:		
Warning 02: No Compass Found		
Status:	Current IP:	Current Port:
ERROR TCP TIME OUT DATA DEV	192.168.66.206	5648
Device Message:		
Error 01: AU No Receiver		
Status:	Current IP:	Current Port:
OK TCP TIME OUT DATA DEV	192.168.77.228	50001
Device Message:		
OK		

DF Commander MK2 is an advanced software platform for managing and monitoring radio direction finding systems, enhancing safety, efficiency, and accuracy in aircraft identification.



Upgrade your ATC center with cutting-edge technology today!



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