

Auto-Tracking Microwave System

ZoneFree 5886/SF



Summary

ZoneFree 5886/SF is an **Auto-Tracking Microwave System** independently developed by **FYSOON**. It integrates a high-precision **auto-tracking system** that effectively resolves the challenge of maintaining accurate alignment between wireless equipment on moving platforms, such as ships and vehicles. This capability significantly extends wireless transmission distances while in motion.

The system utilizes a proprietary RF optimization algorithm, offering excellent anti-interference capability and reliability even in harsh environments. Based on **FYSOON's** exclusive **FREE-A** anti-interference technology, field tests have achieved transmission distances exceeding **100 km** and bandwidth above **2 Gbps**. This system is designed for high-bandwidth, long-distance data backhaul in mobile scenarios including offshore platforms, military field operations, and ship-to-shore or ship-to-ship links.

Core Tracking Technology

The system's **two-axis tracking structure** combines **DSP algorithms** with high-precision **GPS**, **electronic compasses**, **accelerometers**, and **inertial navigation**. With a tracking accuracy of **0.1 degrees**, it ensures reliable communication under complex and dynamic conditions.

Because the position and attitude of mobile platforms constantly change, the **auto-tracking microwave system** continuously adjusts the antenna to maintain a stable, high-quality link. By calculating real-time attitude, roll, and azimuth, the system uses advanced control algorithms to issue precise commands to **high-precision motors**, keeping the microwave link perfectly aligned in real time.

Key Design Advantages

The **auto-tracking system** is engineered for:

- **High Reliability:** Ensuring stable operation even under severe sea conditions.
- **Rapid Response:** Enabling high-speed control reactions to movement on mobile platforms.
- **Strong Anti-Interference:** Capable of withstanding complex electromagnetic environments.

As modern control theory and advanced technologies progress, the performance of this system will continue to improve significantly.

Characteristics

- **High-performance RF chipset** enabling transmission distances exceeding **100 km**
- Auto-tracking hardware constructed with **military-grade components** ensuring stable performance
- **Two-axis tracking structure** with **360° azimuth** and **-15° to 90° elevation** range
- **High-precision alignment** with a tracking accuracy of **0.1°**
- **Rapid-response motors** supporting tracking speeds of **30°/s** per axis
- **Anti-salt-corrosion protection** specifically designed for marine environments
- **Operational durability** in sea conditions up to **Grade 8**
- **High-transparency fiberglass enclosure** with an **IP67** protection rating
- **Versatile Networking:** Supports **nLoS, PtP, PtMP, MESH** and etc operating modes
- **Interference immunity** and **DFS (Dynamic Frequency Selection)** support
- **Flexible Power Options:** Supports wide-voltage **DC** and **PoE** power supply

Specifications

General Parameters	
Working Frequency Band	300 – 6000 MHz (customizable)
Transmission Rate	2000 Mbps
Transmission Distance	100 km
RF Chains / Spatial Streams	1:2×2
Networking Modes	nLoS / PtP / PtMP / MESH etc
Wireless Encryption	AES-128 / AES-256 Dynamic Encryption, IEEE 802.1X, EAP / EAP2-TLS
Layer 2 Isolation	Supported
Antenna Type	Built-in dual-polarized directional antenna
Enclosure	High-transparency fiberglass
Network Interface	1 × 1000 Mbps RJ45 10GE SFP (supports PoE input)
Product Dimensions	∅1400 × 1500 mm (depends on antenna specs)
Installation Method	Dedicated mounting bracket
Power Supply	12 – 24 V PoE or AC 220 V
Power Consumption	≤ 170 W
Operating Temperature	–50 °C ~ +85 °C
Operating Humidity	5 % – 90 % (non-condensing)
Weight	20 kg (excluding bracket)

Auto-Tracking Parameters	
Azimuth Range	360 °
Elevation Range	–15 ° ~ 90 °
Tracking Accuracy	± 0.5 ° (customizable to ± 0.1 °)
Tracking Speed per Axis	30 ° /s
Roll Compensation	± 30 °

Software Parameters	
Host Monitoring	Supports host online/offline monitoring
Background Scripts	Supports custom background script monitoring and execution
Watchdog	Supported
SNMP	Supports v1, v2
File Transfer	Supports TFTP / FTP
WMM	Supports Wireless Multimedia
QoS	Supports custom priority queues
Loop Detection	Supports STP / RSTP / MSTP spanning-tree protocols
Network Protocols	IPv4 / IPv6 dual stack
Software Tools	Ping, Telnet, SSH, MAC-Telnet network scan, frequency / channel scan, packet analysis, etc.
Device Management	IP / MAC-Telnet, SSH, SNMP, WEB
Device Maintenance	Account management, log management, performance monitoring, resource management, device control (shutdown, reboot, factory reset, configuration backup, firmware upgrade), email notifications, etc.
Interface Language	Supports Chinese and English