

PRODUCT SPECIFICATION

YNW-6401JZ

Airborne Broadband Wireless MESH Ad-Hoc Network
Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

2026.8 (V1.0)

Model YNW-6401JZ

Airborne

Product Name Airborne Broadband Wireless MESH Ad-Hoc Network Equipment

Series YNW-6400 Series MESH Ad-Hoc Network Equipment

Core Technology OFDM + MESH Multi-hop Ad-Hoc Network + MIMO

1. Product Overview

Product Positioning: The YNW-6401JZ is a compact, high-throughput airborne broadband wireless MESH Ad-Hoc network device, developed on OFDM technology and MESH multi-hop Ad-Hoc networking. It enables free-form networking among different device form factors, providing users with a fast, flexible solution for rapidly establishing reliable wireless links in complex environments.

The YNW-6401JZ (airborne) broadband wireless MESH Ad-Hoc product is a newly launched, compact, high-throughput wireless broadband MESH device from our company. Developed on OFDM technology and MESH multi-hop Ad-Hoc networking, it achieves free-form networking among different device form factors, enabling users to rapidly build reliable wireless links in complex environments and providing fast, flexible solutions for various application requirements (e.g., HD video, voice intercom, and IP data transmission).

With an advanced MESH design philosophy that requires no central gateway, any single unit can self-organize into a network; should any device within a group go offline, other devices within effective antenna coverage continue communications so the network never drops. In practical applications, a ring network topology can be adopted without concern for ring-network congestion. As a wireless extension of fixed or vehicle-mounted stations within a multi-hop Ad-Hoc network, it easily penetrates emergency scenes, dense crowds, or building interiors, greatly enhancing network depth-of-coverage communication capability.

- **Core Selling Points:** MIMO dual-channel Ad-Hoc networking, up to 96Mbps; supports 64-node Ad-Hoc; air-to-ground transmission over 10km
- **Target Users:** System integrators and contractors in military communications, public security, emergency communications, and industry-specific private networks
- **Typical Applications:** Emergency response, counter-terrorism and riot control, covert reconnaissance, special operations, disaster rescue, and routine patrol — "peacetime, emergency, and wartime" missions

Design Highlights: Lightweight (1.1Kg) and compact (150×100×45mm), airborne design with removable battery, power-on-and-use operation with no configuration required. Transmission range exceeds 5km in open ground environments, more than 10km air-to-ground, and 300~1000m in obstructed environments.

2. Product Views



YNW-6401JZ Product Views

3. Key Features



MIMO Dual-channel Ad-Hoc

MIMO 2×2 dual-channel design improves spectrum utilization and transmission reliability



Customizable Wide Frequency Band

Frequency from 350MHz to 2GHz customizable to suit different industry private-network requirements



Centralized Management Platform

Supports the MESHCOM management platform, including GIS topology visualization management



High Throughput

Peak data rate up to 96Mbps; 70Mbps@20MHz peak throughput



HDMI Video Output

Supports HDMI output for real-time HD video backhaul and display



Removable Battery Design

Removable battery, 2.5h charging time and 4-6h operating time, powered by 16.8V supply



Power-on-and-use

Ready to use upon power-on, no configuration; transmit power 1-4W adjustable; channel bandwidth 2M/5M/10M/20M/40M adjustable



Rugged and Durable

IP65-rated protection, operating temperature -30°C ~ +65°C, storage temperature -45°C ~ +85°C

4. Technical Specifications

4.1 RF Parameters

Category	Parameter	Specification	Custom Option
RF Parameters	Networking Frequency	1400MHz - 1480MHz	350MHz ~ 2GHz customizable
	MIMO	2×2	—
	Modulation	DSSS/CCK BPSK/QPSK; COFDM BPSK/QPSK/16-QAM/64-QAM	Fixed data rate customizable
	Transmit Power	2~4W adjustable	Power customizable
	Receive Sensitivity	up to -97dBm	—
	Channel Bandwidth	2M / 5M / 10M / 20M / 40M (adjustable)	—
	Effective Range	> 10km line-of-sight (elevated)	—
	Data Rate	Peak 70Mbps @ 20MHz	—

4.2 Networking & Management

Category	Parameter	Specification	Custom Option
Networking & Management	Configuration Method	WEB, MESHCOM management platform	—
	Ad-Hoc Nodes	Supports 64 nodes	—
	System	MESHCOM Ad-Hoc network	—
	Network Topology	Centerless network, star, chain/line, mesh, etc.	—

4.3 Physical & Environmental

Category	Parameter	Specification	Custom Option
Physical & Environmental	Operating Temperature	-30°C ~ +65°C	—
	Operating Humidity	5% ~ 95% (non-condensing)	—
	Storage Temperature	-45°C ~ +85°C	—
	Weight	1.1Kg (incl. battery, excl. antenna)	—
	Dimensions	150 × 100 × 45mm	—
	Ingress Protection	IP65	—

4.4 Electrical Characteristics & Interfaces

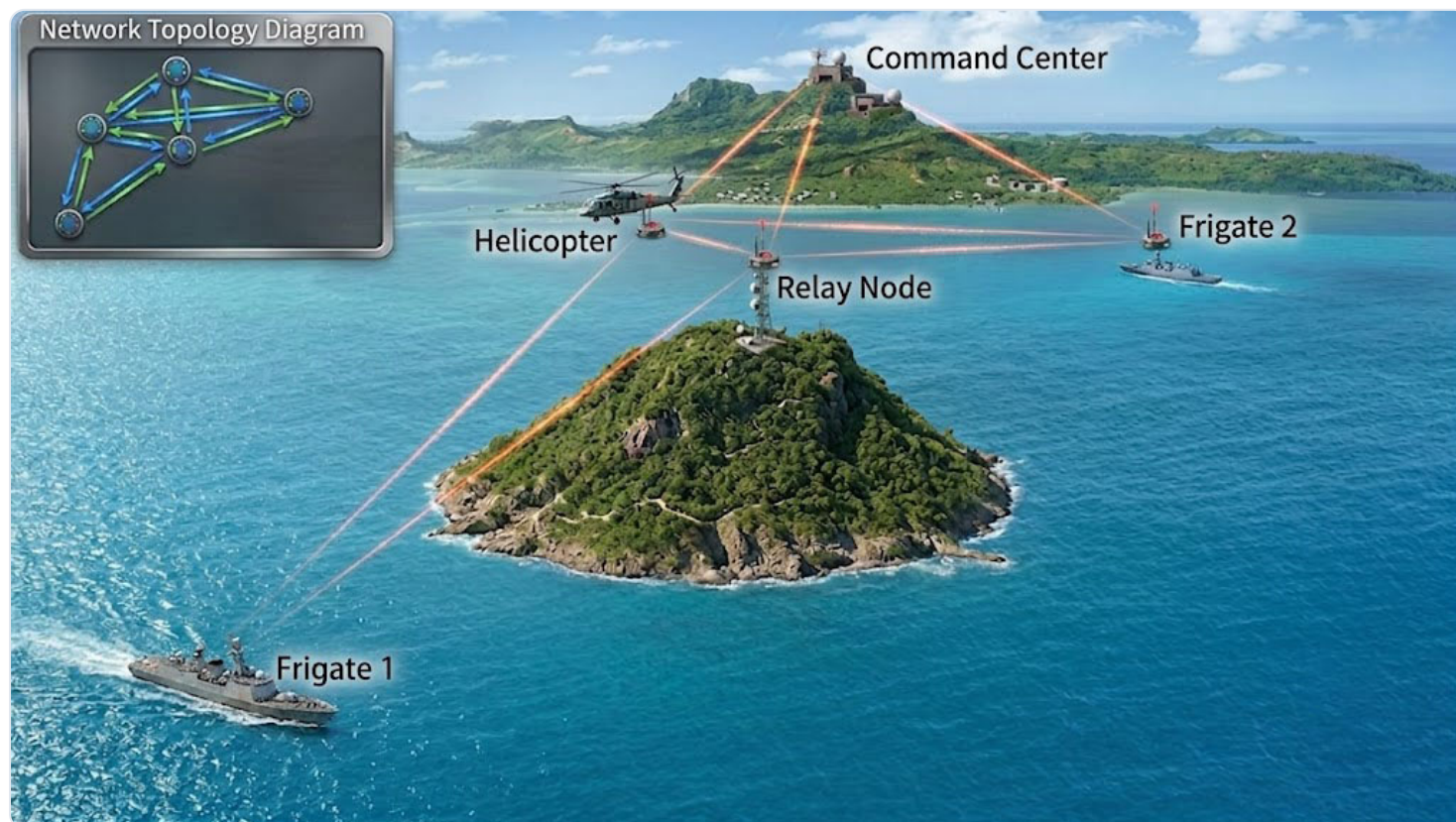
Category	Parameter	Specification	Custom Option
Electrical Characteristics	Charging Time	2.5h	—
	Operating Time	4-6h	—
	Power Supply	16.8V	—
	Battery	Removable	—
	Transmit Power	1-4W adjustable	Power customizable
External Interfaces	Antenna Connector	1.4GHz antenna connector × 2	—
	Signal Indicator	× 1	—
	Power Switch	× 1	—
	Charging Port	× 1	—
	Ethernet Port	× 1	—
	TTL	× 1	—

Customization Note: This product supports a variety of customization options including frequency band, output power, number of nodes, and video-input interfaces. For details, please contact Shenzhen Yuneng Micro Technology Co., Ltd.

5. Applications

With its MESH Ad-Hoc technology, lightweight and compact design, this product can be flexibly fitted to various drones/UAVs. It serves military communications private networks, public-security private networks, emergency communications private networks, industry information private networks, regional broadband private networks, wireless surveillance private networks, collaborative management private networks, and intelligent transmission private networks. It provides stable, reliable, timely, and efficient HD video, multi-channel data, clear voice, and visualized command-and-dispatch services for military communications, counter-terrorism and emergency response, public-security law enforcement, security operations, rescue and disaster relief, firefighting command, forest fire prevention, forest-area monitoring, civil defense / earthquake response, power-line patrol, digital oilfield, UAV swarms, fleet interoperability, vessel formations, maritime communications, airport ground handling, metro emergency, highway construction, hydrological monitoring, mobile live broadcasting, and medical sectors.

1. Border & Coastal Defense MESH Ad-Hoc Wireless Communications



Application Scenario

Border patrol, coastal surveillance, border port control, coastline warning, border outpost interconnection, and maritime law-enforcement vessel formations — long-range, wide-coverage border and coastal defense communications. National borderlines and coastlines are extensive with complex, varied terrain including mountains, deserts (gobi), jungles, and islands where conventional public networks often fail to provide full coverage, making dedicated broadband communications essential for border and coastal defense command and dispatch.

Deployment Solution

- **UAV aerial relay:** The YNW-6401JZ airborne device is mounted on UAVs to provide aerial relay along borderlines or coastlines; single-hop air-to-ground range exceeds 10km, building a centerless broadband private network covering tens to hundreds of kilometers.
- **Air-ground integrated networking:** Aerial UAV nodes, fixed border-outpost nodes, vessel nodes on patrol boats, and mobile command-vehicle nodes form a free Ad-Hoc network achieving integrated "shore-sea-air" coverage.
- **Lightweight airborne design:** Weighing only 1.1Kg with a compact form factor, the device is easily mounted on a variety of UAV platforms for flexible deployment.

Application Value

Real-time HD video, voice intercom, and situational-awareness data are backhauled between border outposts, patrol boats, UAVs, and mobile command vehicles, keeping the command link active even in remote areas without public network coverage. The command center can promptly grasp border dynamics and maritime

situational awareness, effectively enhancing border/coastal situational awareness, rapid response, and coordinated operations, and providing reliable communications support for border and coastal control.

2. Convoy MESH Ad-Hoc Wireless Communications



Application Scenario

Convoy formation marching, military escort and transport, material transportation, VIP convoy security, long-distance passenger-fleet management, logistics fleet coordination, and railway engineering-vehicle group communications — mobile scenarios. As inter-vehicle distances constantly change and road conditions are complex, conventional communications cannot guarantee stable real-time links between convoy members.

Deployment Solution

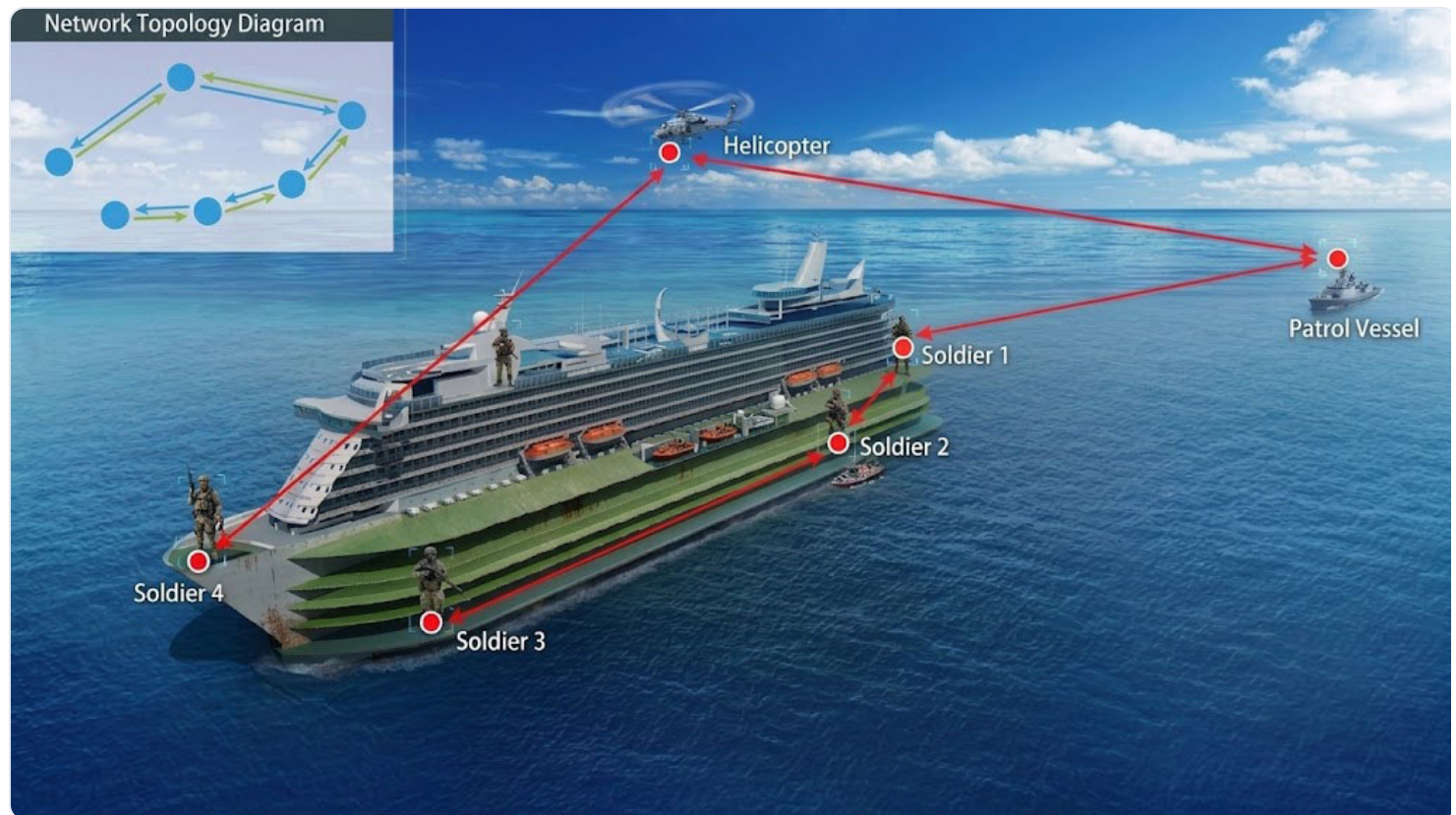
- **Vehicle-aircraft coordinated networking:** A vehicle-mounted MESH device is deployed on each vehicle, with a UAV carrying the YNW-6401JZ serving as an airborne relay; vehicle-to-vehicle links are established over MESH Ad-Hoc networking through the aerial relay without relying on fixed base stations or public networks.
- **Dynamic route convergence:** Under high-speed movement, changing inter-vehicle distances, road masking, and tunnel transit, the network topology reconfigures automatically and routing converges within seconds without communication interruption.
- **Concurrent multi-service:** Supports concurrent onboard HD video backhaul, voice intercom, vehicle position sharing, and command-instruction issuance, with peak throughput of 70Mbps satisfying broadband requirements.
- **Relay extension:** With large fleets or severe terrain masking, coverage is extended via UAV aerial relay, supporting 64-node Ad-Hoc networking.

Application Value

While convoys are in motion, HD video, voice intercom, and location information are shared in real time between vehicles, and the command vehicle can grasp the full fleet situation for integrated formation command

and coordinated dispatch. In counter-terrorism/stability maintenance, armed escort, and military material transport missions, it provides a public-network-independent, secure channel for the fleet, significantly improving fleet mobile command capability and mission security.

3. Vessel-boarding Reconnaissance MESH Ad-Hoc Wireless Communications



Application Scenario

Maritime boarding inspection, surveillance and evidence collection, cross-ship coordinated operations, fleet formation communications, maritime law-enforcement boarding, coast guard patrols, and naval tactical coordination. The maritime environment presents unique challenges including wave-induced motion, severe multipath interference, and constantly changing relative positions between vessels, which conventional communications cannot reliably overcome.

Deployment Solution

- **Ship-aircraft coordinated networking:** MESH devices are deployed on multiple vessels, while a UAV carrying the YNW-6401JZ provides an aerial relay; vessels establish broadband MESH Ad-Hoc links through the aerial relay to support fleet formation coordination.
- **Boarding-team extension:** The boarding-inspection team is equipped with portable MESH devices, maintaining real-time communication with the mother vessel and the aerial UAV, backhauling onboard HD video and voice to the mother vessel's command center in real time.
- **Multipath-interference resilience:** COFDM modulation effectively suppresses maritime multipath reflections, maintaining link stability under wave-induced motion and vessel sway in high-dynamic environments.
- **Fast route convergence:** Supports fast route convergence in high-dynamic environments; the network topology auto-adjusts as vessel relative positions change, without communication interruption.

Application Value

During boarding inspections, surveillance/evidence collection, and cross-ship coordination, stable maritime broadband Ad-Hoc links are established between vessels, between vessels and the boarding team, and between

vessels and the aerial UAV, backhauling HD video and voice in real time and providing reliable communications support for maritime law enforcement, search and rescue, and tactical coordination. Commanders can grasp the boarding-site situation in real time and make remote decisions, significantly improving maritime enforcement safety and tactical coordination efficiency.

4. Public Security Disposal & Armed Patrol MESH Ad-Hoc Wireless Communications



Application Scenario

Major event security (conferences, competitions, performances), temporary interception and arrest operations, armed patrols, counter-terrorism and emergency response, mass-incident disposal, VIP protection, checkpoint enforcement, and special-duty missions. Such public-safety scenarios impose extremely high requirements on rapid deployment, temporary private networks, multi-channel video backhaul, and resilience against public-network congestion.

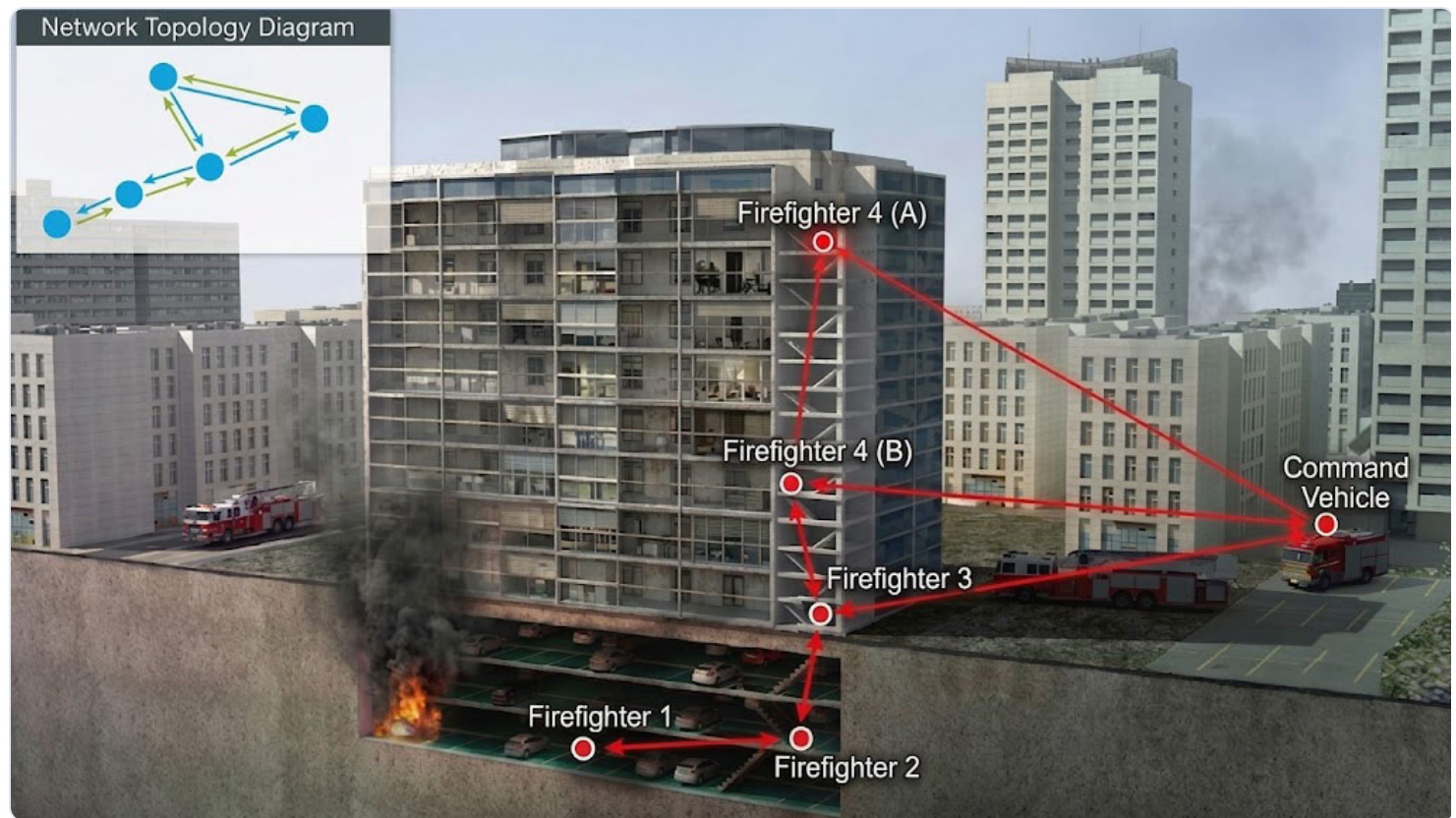
Deployment Solution

- **UAV aerial disposal:** The YNW-6401JZ is mounted on a UAV to establish an aerial relay node above the mission site, enabling a dedicated broadband private network to be built within 5 minutes, completely independent of the public network.
- **Multi-terminal integrated access:** Body-worn law-enforcement cameras, vehicle terminals, temporary surveillance cameras, and UAV aerial relays converge through the MESH network, backhauling multiple real-time video streams to the command center.
- **Centerless architecture:** The centerless Ad-Hoc architecture does not rely on public-network base stations, maintaining communications even under traffic congestion or public-network outage emergencies.
- **Remote management:** Supports WEB network-management platform and MESHCOM management platform for remote configuration and management; the command center can remotely manage all node devices.
- **Network transparent transmission:** Supports network transparent transmission to interconnect with existing public-security command/dispatch systems and video surveillance platforms for seamless integration.

Application Value

Provides the public-security command with real-time on-site situational awareness during major event security, temporary disposal, and armed patrol operations, with stable backhaul of multi-channel HD video, voice intercom, and data. The centerless architecture ensures uninterrupted communications even under extreme conditions such as public-network outage or congestion, providing reliable communications support for counter-terrorism/emergency response and enhancing rapid response and coordinated operations.

5. Firefighting & Rescue MESH Ad-Hoc Wireless Communications



Application Scenario

Fire suppression (building, forest, and chemical fires), earthquake rescue, accident emergency response, hazardous-material leakage incidents, traffic-accident rescue, and building-collapse rescue. On-site public networks are often interrupted or severely congested during disasters, necessitating dedicated communications for rescue command.

Deployment Solution

- **UAV aerial reconnaissance:** The YNW-6401JZ is mounted on a firefighting UAV for aerial fire-scene reconnaissance and relay communications, rapidly establishing a dedicated broadband Ad-Hoc network among firefighters, command vehicles, and temporary command points.
- **Three-tier air-ground networking:** UAV aerial nodes, firefighters' portable MESH devices, and on-site command-vehicle base stations form a three-tier network, backhauling interior fire-scene HD video to the on-site command vehicle and rear command center in real time.
- **Concurrent multi-stream video:** Supports concurrent backhaul of multiple HD video streams; the command center can simultaneously view live pictures of multiple fire points and rescue teams to fully grasp the on-site situation.
- **Self-healing / damage resilience:** When a node is damaged or moves, the network automatically reconfigures, and remaining nodes re-establish routing without communication interruption, sustaining rescue continuity.

Application Value

Enables the rear command center to grasp the full on-site picture, scientifically dispatch rescue forces, and improve rescue efficiency and safety. Firefighters can receive command instructions in real time, backhaul on-site video, and hold voice intercom with the command center, avoiding blind operations and maximizing firefighter safety and rescue outcomes. Provides reliable communications support within the "golden 72-hour rescue window," buying critical time for life-saving operations.

6. Natural-disaster Emergency Command MESH Ad-Hoc Wireless Communications



Application Scenario

Emergency command communications for sudden natural disasters — earthquakes (especially magnitude 7+), floods (peak-flow transit, dam breaches, urban waterlogging), debris flows, landslides, typhoons, snowstorms, and freezing rain. Such disasters commonly destroy extensive communications infrastructure and fully disrupt public networks, leaving emergency command in an "information island" dilemma.

Deployment Solution

- **Rapid disaster-area deployment:** Rescue teams carry YNW-6401JZ devices into affected areas; UAVs mount the devices to erect temporary aerial communication nodes, using multi-hop relays for wide-area coverage that overcomes terrain blocking.
- **Air-ground integrated networking:** Combined with UAV aerial relay platforms, an "air-ground" three-dimensional Ad-Hoc network overcomes complex terrain such as mountains and ruins for whole-disaster-area coverage.
- **Multi-hop relay wide coverage:** Supports multi-hop relay; single-hop air-to-ground exceeds 10km, and multi-hop cascading achieves wide-area coverage of tens of kilometers to meet large-area disaster communications needs.
- **Self-healing / damage resilience:** Self-healing ensures automatic network reconfiguration as nodes move, equipment is damaged, or new nodes join, with no manual intervention, providing sustained and reliable communications support for emergency command.
- **Multi-service convergence:** Converges disaster-area video backhaul, disaster data reporting, rescue-team position sharing, command-instruction issuance, and victim-aid information collection.

- **Front-rear coordination:** The front-line on-site command post links to rear provincial/national emergency command centers via satellite links for real-time coordinated command.

Application Value

Provides stable, reliable communications support for emergency command and dispatch during sudden natural disasters, backhauling on-site video, disaster data, and rescue-team positions to front-line and rear commands in real time. The command center fully grasps the disaster situation, scientifically dispatches rescue forces, optimizes rescue routes, and improves rescue efficiency. Provides communications support for life-saving within the "golden 72-hour rescue window," minimizing casualties and property loss.

7. Forest Fire Prevention MESH Ad-Hoc Wireless Communications



Application Scenario

Forest fire monitoring, forest-area patrol communications, watchtower interconnection, fire frontline command, fire-scene situational backhaul, forest-area wildlife protection, and forest-area public-order control. China's extensive forest resources are mostly in mountainous and remote areas with weak public coverage, so forest-fire communications have long faced high-cost coverage and networking challenges.

Deployment Solution

- **Aerial forest-area patrol:** The YNW-6401JZ is mounted on forest-fire-prevention UAVs for patrol inspection above forest areas, building an aerial broadband Ad-Hoc private network covering vast forest regions.
- **Multi-hop relay overcoming terrain:** UAV aerial relays overcome forest-line-of-sight blocking and terrain undulation for wide-area coverage in hills, mountains, and canyons, with air-to-ground transmission over 10km.
- **Watchtower-UAV-body-worn coordination:** Fixed watchtower monitoring, patrol UAV aerial inspection, and on-site firefighting personnel form a three-position coordinated network, backhauling video and alarms to the fire-prevention command center in real time.
- **Automatic fire alarm:** Interfaces with smoke detectors and infrared thermal-imaging fire-monitoring devices; automatic fire alarms are backhauled to the command center over the MESH network for early detection, early reporting, and early response.

Application Value

Builds an integrated air-ground broadband Ad-Hoc private network across vast forest areas, backhauling video and alarm information from watchtowers, patrol UAVs, and fire frontlines to the command center in real time for

early detection, reporting, and response. During an active fire, it provides reliable communications support for frontline command, improving coordinated suppression efficiency and firefighter safety assurance, and providing solid communications support for forest-resource protection and ecological security.

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