

PRODUCT SPECIFICATION

YNW-6410CZ

Vehicle-mounted Broadband Wireless MESH Ad-Hoc
Network Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

2026.8 (V1.0)

Model YNW-6410CZ

Vehicle-mounted

Product Name Vehicle-mounted 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 2×2 +
10W High Power + 4G LTE

1. Product Overview

Product Positioning: The YNW-6410CZ is a mid-size, high-throughput vehicle-mounted wireless Ad-Hoc communications device based on OFDM technology and MESH multi-hop Ad-Hoc networking. It supports automatic networking and automatic route computation without manual intervention, with transmit power up to 10W, supporting 64-node Ad-Hoc networking and multi-hop transmission for seamless area coverage — the ideal choice for mobile scenarios such as convoy formations, emergency command, and mobile law enforcement.

The YNW-6410CZ vehicle-mounted tactical broadband wireless MESH Ad-Hoc product is a newly launched, mid-size, 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). As a broadband Ad-Hoc radio forming a centerless, Ad-Hoc, self-adaptive, self-healing Mesh network, it is the optimal choice for point-to-point, point-to-multipoint, or multipoint-to-multipoint integrated-services communications. The Mesh radio delivers dynamic routing, multi-hop relay of HD video, multi-channel data, and high-fidelity voice between different nodes within the same network under complex conditions such as fast movement, non-line-of-sight (NLOS) obstruction, and environmental interference.

This product adopts an all-IP design with flexible installation and convenient operation and maintenance. It offers customizable frequency bands and extensible features such as WiFi, GPS, and 3G/4G to support integrated communications requirements. The vehicle-mounted design provides 10W high transmit power (customizable), with a point-to-point throughput peak of up to 80Mbps and a point-to-point transmission distance of 20-60km (line of sight). It supports 64-node Ad-Hoc networking and automatic multi-hop transmission for seamless area coverage. It is power-on-and-use with no configuration required, supports configuration via mobile phone and Web, and can be managed remotely. It is flexibly applied to 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.

- **Core Selling Points:** 10W high-power transmission; point-to-point throughput peak of 80Mbps; point-to-point transmission distance of 20-60km; supports 64-node Ad-Hoc networking with automatic multi-hop transmission for seamless area coverage
- **Target Users:** Mobile command-and-dispatch communications users in the military, armed police, fire services, public security, emergency communications, and fleet transport

- **Typical Applications:** Mobile scenarios such as convoy formation marching, military escort and transport, emergency command, counter-terrorism and emergency response, armed patrol, firefighting command, and border patrol

Design Highlights: Vehicle-mounted design, weight 5.34Kg, dimensions 480×300×45mm, maximum total power consumption 46W. Supports CVBS/VGA/HDMI video output for connection to various display devices; supports 2.4G/5.8G WiFi hotspot and 4G LTE access; operating frequency band 350MHz-2GHz customizable; signal bandwidth 2/5/10/20/40MHz adjustable; power-on-and-use with no configuration required.

2. Product Views



YNW-6410CZ

3. Key Features



High-throughput

Point-to-point throughput peak of up to 80Mbps, supporting concurrent HD video, multi-channel data, and voice



Ultra-long Transmission Range

Point-to-point transmission distance of 20-60km (line of sight); elevated unobstructed coverage of vast areas



Automatic Networking

Automatic networking and automatic computation of intra-network routes without manual intervention, effectively saving manpower and resources



64-node Ad-Hoc

Supports 64-node Ad-Hoc networking with automatic multi-hop transmission for seamless area coverage



Power-on-and-use

Ready to use upon power-on, no configuration; a dedicated broadband Ad-Hoc network can be deployed on-site within 5 minutes



Remote Management

Supports configuration via mobile phone and Web, enabling remote management of the device



High-power Transmission

Transmit power 10W (customizable) for long-distance, wide-area coverage requirements



Customizable Wide Frequency Band

Operating frequency band 350MHz-2GHz customizable to suit different industry private-network requirements



Flexibly Adjustable Bandwidth

Signal bandwidth 2/5/10/20/40MHz adjustable to suit different business scenarios



Multi-format Video Output

Supports CVBS, VGA, and HDMI video output for connection to various display devices

4. Technical Specifications

4.1 RF Parameters

Category	Parameter	Specification	Custom Option
RF Parameters	Networking Frequency	1400MHz - 1480MHz @ 10W	350MHz ~ 2GHz customizable
	MIMO	2×2	—
	Modulation	DSSS/CCK BPSK/QPSK; OFDM BPSK/QPSK/16-QAM/64-QAM	—
	Transmit Power	40dBm (10W customizable)	Power customizable
	Receive Sensitivity	-102dBm @ 5MHz BPSK	—
	RF Interfaces	MESH N×2, WIFI SMA×1, 4G LTE SMA×1	—
	Channel Bandwidth	2M / 5M / 10M / 20M / 40M (adjustable)	—
	WiFi Hotspot	2.4G / 5.8G	—
	Effective Range	Elevated line-of-sight transmission 20-60km (elevated)	—

4.2 Networking & Management

Category	Parameter	Specification	Custom Option
Networking & Management	Configuration Method	WEB, MESHCOM management platform; supports mobile phone and Web remote management	—
	Ad-Hoc Nodes	No fewer than 50 units (supports 64-node Ad-Hoc)	—
	System	MESHCOM Ad-Hoc network	—

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	5.34Kg	—
	Dimensions	480 × 300 × 45mm	—

4.4 Electrical Characteristics & Interfaces

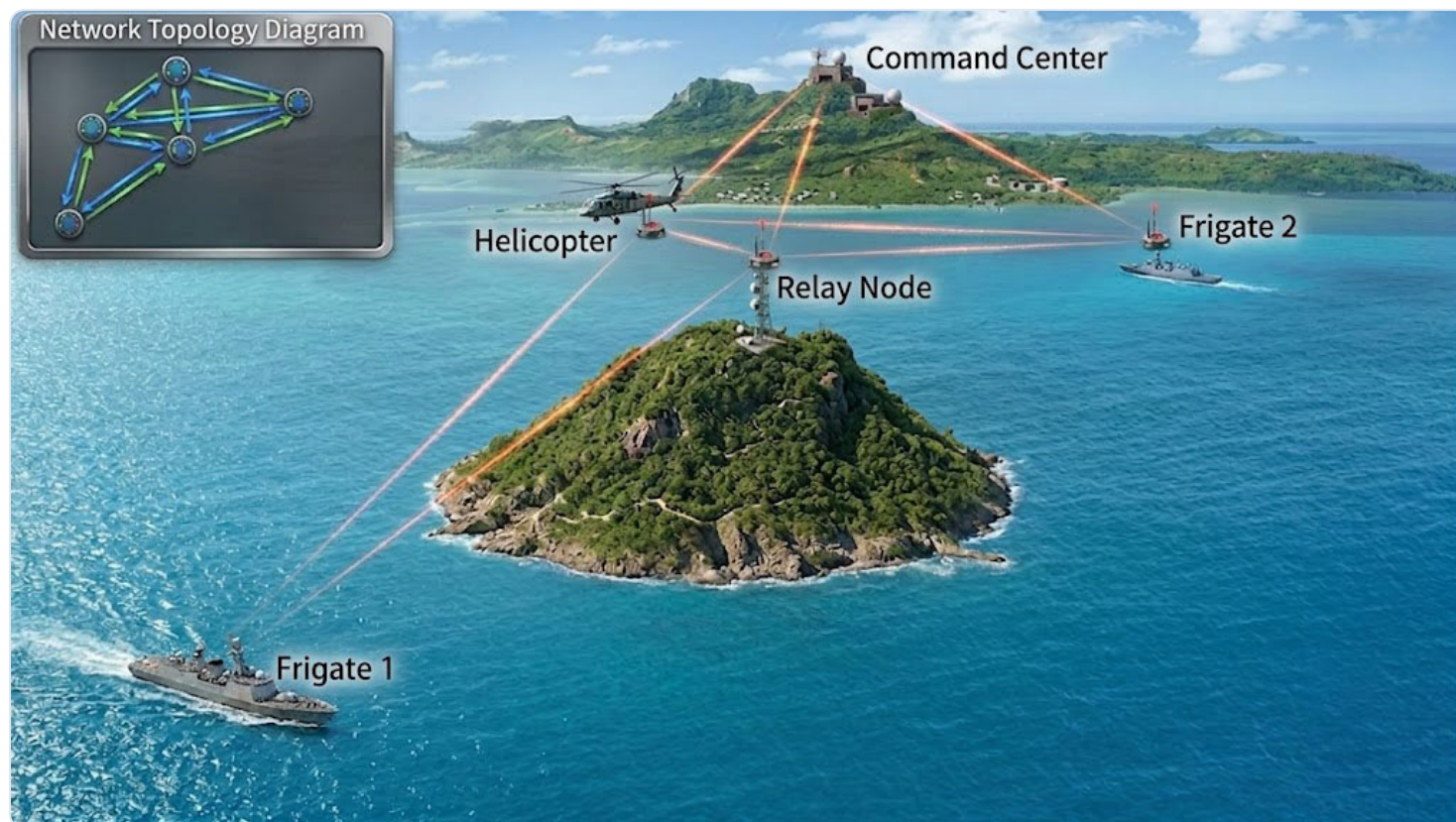
Category	Parameter	Specification	Custom Option
Electrical Characteristics	Total Power Consumption	Maximum total power consumption 46W	—
	Power Supply	Vehicle power supply	—
External Interfaces	Power Switch	× 1	—
	Public/Private-network Switch	× 1	—
	Network Interface	× 1	—
	Signal Interface	× 1	—
	Audio Interface	× 1	—
	4G Interface	× 1	—
	Private-network LTE Interface	× 1	—
	Video Output	Supports CVBS, VGA, HDMI output	—

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

5. Applications

With its MESH Ad-Hoc technology, this product can be flexibly applied to 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

- **Vehicle patrol extension:** The YNW-6410CZ vehicle-mounted device is deployed with border patrol convoys and freely networks with fixed border-outpost radios and patrol-boat ship-borne radios. With 10W high-power transmission and elevated line-of-sight range of 20-60km, it achieves integrated "shore-sea-vehicle" wide-area coverage.
- **Multi-form-factor node convergence:** Fixed border-outpost deployment, patrol-boat ship-borne deployment, convoy vehicle-mounted deployment, and single-soldier handheld deployment freely self-organize, supporting 64-node Ad-Hoc networking with seamless area coverage.
- **Public/private-network switching:** Supports a public/private-network switching interface, enabling interconnection between the border private network and the rear command center in areas with public coverage for integrated front-rear command.

Application Value

HD video, voice intercom, and situational-awareness data are backhauled in real time between border outposts, patrol boats, and patrol convoys, keeping the command link active even in remote areas without public network coverage. The command center can grasp border dynamics, maritime situational awareness, and vehicle positions in real time, effectively enhancing border/coastal situational awareness, rapid response, and coordinated operations, 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.

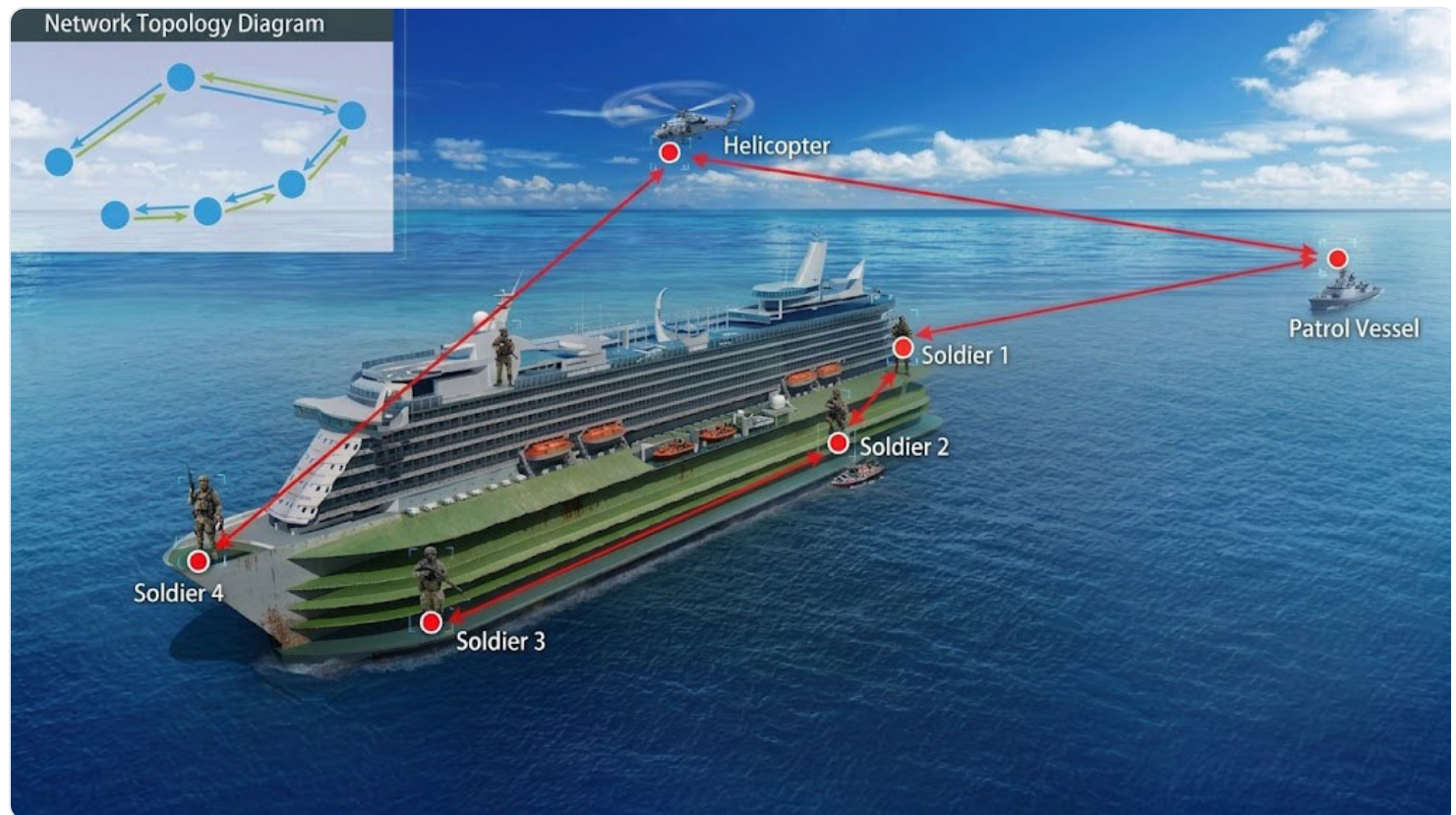
Deployment Solution

- **Per-vehicle deployment:** Each vehicle deploys the YNW-6410CZ vehicle-mounted MESH device; MESH Ad-Hoc links are established automatically between vehicles without relying on fixed base stations or public networks, power-on-and-use with no configuration.
- **Dynamic route convergence:** Under high-speed movement, changing inter-vehicle distances, road masking, and tunnel transit, the network automatically networks and computes intra-network routes, reconfiguring the topology without manual intervention.
- **Concurrent multi-service:** Supports concurrent onboard HD video backhaul, voice intercom, vehicle position sharing, and command-instruction issuance, with a point-to-point throughput peak of up to 80Mbps.
- **Multi-format video output:** Supports CVBS, VGA, and HDMI video output; the command vehicle can view multiple real-time video streams via external displays.
- **4G LTE backhaul:** Offers 4G LTE connectivity to interconnect the convoy private network with the rear command center in areas with public coverage, enabling integrated front-rear command.

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. The 64-node Ad-Hoc capability supports communications for large convoy formations.

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-borne deployment extension:** The YNW-6410CZ vehicle-mounted device can be deployed in the vessel's command cabin, maintaining real-time communication with the boarding team's handheld devices, the mother vessel, and formation vessels, backhauling on-board HD video and voice to the mother vessel's command center in real time.
- **Vessel-to-vessel coordinated networking:** MESH devices are deployed on multiple vessels; broadband MESH Ad-Hoc links form automatically between vessels, with 10W high-power transmission supporting formation coordinated operations and integrated communications.
- **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:** Automatic networking and automatic computation of intra-network routes ensure 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 the boarding team and vessels, 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

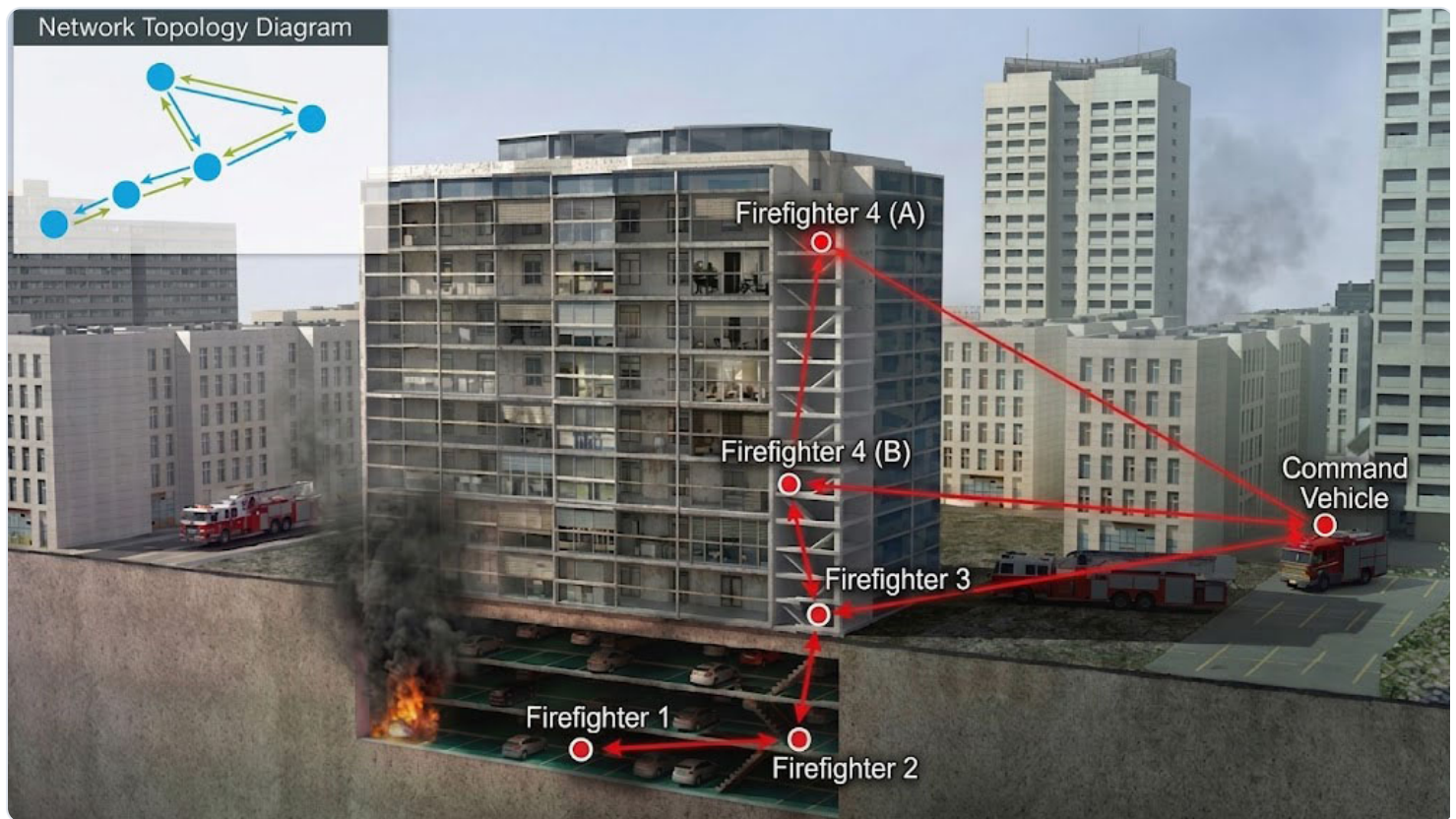
- **Rapid vehicle deployment:** The YNW-6410CZ vehicle-mounted device is power-on-and-use with no configuration, enabling a dedicated broadband communications network to be built on-site within 5 minutes, completely independent of the public network.
- **Multi-terminal integrated access:** Single-soldier law-enforcement cameras, vehicle terminals, temporary surveillance domes, and UAV aerial relays converge through the MESH Ad-Hoc network, with multiple video streams backhauled to the command vehicle in real time.
- **Centerless architecture:** The centerless Ad-Hoc architecture does not rely on public-network base stations, maintaining communications even under network congestion or public-network outage (e.g., congestion caused by large crowds at major events).
- **4G LTE backhaul:** Offers 4G LTE connectivity to interconnect the on-site private network with the public-security command center in areas with public coverage, enabling integrated front-rear command.
- **Multi-format video output:** Supports CVBS, VGA, and HDMI video output, allowing on-site commanders to view multiple real-time video streams via external displays.

- **Remote management:** Supports configuration via mobile phone and Web, enabling remote device management for convenient maintenance.

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

- **Rapid fire-engine deployment:** The YNW-6410CZ vehicle-mounted device is deployed in the firefighting command vehicle, power-on-and-use, building a dedicated broadband Ad-Hoc network among firefighters, command vehicles, and temporary command points within 5 minutes, without any infrastructure.
- **Multi-hop relay wide coverage:** Supports multi-hop relay with 10W high-power transmission and elevated line-of-sight range of 20-60km; multi-hop cascading achieves wide-area coverage of tens of kilometers to meet large disaster-site communications needs.
- **Concurrent multi-stream video:** Supports concurrent backhaul of multiple HD video streams; the command vehicle 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 device is damaged or moves, the network automatically reconfigures, and remaining nodes re-establish routing without communication interruption, sustaining rescue continuity.
- **Multi-format video output:** Supports CVBS, VGA, and HDMI video output, allowing the command vehicle to view multiple real-time video streams via external displays.

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

- **Emergency vehicle rapid access:** The YNW-6410CZ vehicle-mounted device is deployed in emergency communications vehicles that rapidly enter affected areas to erect temporary 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 with 10W high-power transmission and elevated line-of-sight range of 20-60km; 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.
- **4G LTE backhaul:** In areas with partial public coverage, 4G LTE interconnects the disaster-area private network with the rear command center for integrated front-rear 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

- **Patrol-vehicle networking:** Patrol vehicles deploy the YNW-6410CZ vehicle-mounted device deep into forest areas, freely networking with watchtower fixed radios and patrol UAVs to build a broadband Ad-Hoc private network covering vast forest areas.
- **Multi-hop relay overcoming terrain:** Multi-hop relays overcome forest-line-of-sight blocking and terrain undulation for wide-area coverage in hills, mountains, and canyons, with 10W high-power transmission and elevated line-of-sight range of 20-60km.
- **Watchtower-UAV-patrol-vehicle coordination:** Fixed watchtower monitoring, patrol UAV aerial inspection, and fire-suppression patrol vehicles 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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