

PRODUCT SPECIFICATION

YNW-6502BK

Emergency Video Surveillance Broadband Wireless
MESH Ad-Hoc Network Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

2026.8 (V1.0)

Model YNW-6502BK

Emergency Surveillance

Product Name Emergency Video Surveillance Broadband Wireless MESH Ad-Hoc Network Equipment

Series YNW-6500 Series MESH Ad-Hoc Network Equipment

Core Technology COFDM + MESH Multi-hop Ad-Hoc Network + Integrated HD PTZ Camera Dome + Built-in Li-ion Battery

1. Product Overview

Product Positioning: The YNW-6502BK is a portable wireless video surveillance broadband MESH device developed on COFDM technology and MESH multi-hop Ad-Hoc networking. Equipped with a built-in HD camera and a high-performance internal Li-ion battery, it offers high integration and can operate in areas with no 4G signal and no public infrastructure (e.g., fiber optic or network cable). It is a HD PTZ camera dome with an integrated wireless broadband Ad-Hoc module, purpose-built for outdoor fixed HD surveillance applications.

The YNW-6502BK video surveillance broadband wireless MESH Ad-Hoc product is a newly launched portable wireless video surveillance MESH device from our company. Developed on COFDM 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. With a built-in HD camera, high integration, and a high-performance internal Li-ion battery, it satisfies the special requirements of temporary surveillance and rapid deployment. As a broadband Ad-Hoc radio that forms 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.

It can operate in areas with no 4G signal and no public infrastructure (such as fiber optic or network cable), and is a HD PTZ camera dome with an integrated wireless broadband Ad-Hoc module, purpose-built for outdoor fixed HD surveillance. The dome integrates a 1/2.8" high-performance progressive-scan CMOS sensor and a high-performance multimedia processor, an embedded Linux system, an H.265 encoding module, and so on, making it a highly integrated network camera dome that integrates video acquisition, image processing, and wireless transmission in one unit.

This product is highly suitable for the emergency sector and temporary surveillance. With its built-in centerless Ad-Hoc communications function, it can rapidly form a centerless broadband Ad-Hoc network together with the other product series of our company.

- **Core Selling Points:** One-piece structural design integrating an HD PTZ camera dome, a COFDM wireless MESH module, and a high-performance Li-ion battery — turn it on and it works, with no extra power supply, and it can operate in the field with no 4G signal or no public infrastructure coverage
- **Target Users:** Users in emergency communications, public safety, public-security surveillance, firefighting command, temporary monitoring, and rescue and disaster relief

- **Applicable Scenarios:** Emergency communications, temporary surveillance, outdoor monitoring, rescue and disaster relief, firefighting command, forest-area monitoring, and border monitoring — scenarios where there is no public-network coverage or the public network is down

Design Highlights: One-piece structure for easy transport, carrying, and deployment; built-in 10400mAh high-capacity Li-ion battery with operating time of >10 hours; H.265 encoding supporting a variety of video input formats; 30X/20X optical zoom, 12X digital zoom, and 60-80m IR night vision; 360° horizontal rotation and -15°~90° vertical rotation with 200 presets; built-in WiFi and GPS/BeiDou positioning.

2. Product Views



YNW-6502BK Camera Dome Side View (Transparent View)

3. Key Features



One-piece Structure

One-piece structural design, easy to transport, carry, and deploy — turn it on and use, with no extra power supply



Built-in High-capacity Battery

Built-in 10400mAh high-performance Li-ion battery, charging time <3 hours, operating time >10 hours



HD PTZ Camera Dome

1/2.8" progressive-scan CMOS sensor, 1920×1080 resolution, H.265 Main Profile encoding



30X Optical Zoom

30X/20X optional optical zoom, 12X digital zoom, 60-80m IR night vision, 3D noise reduction supported



360° PTZ Rotation

Horizontal 360° continuous rotation, vertical -15°~90°, 200 presets for precise positioning



COFDM Wireless Transmission

Multi-carrier COFDM modulation, peak 70Mbps @ 20MHz, effectively suppressing multipath interference



Centerless Ad-Hoc

Dynamic routing with network Ad-Hoc and self-recovery, supporting P2P/P2MP/MP2MP network topologies



Automatic Day/Night Conversion

ICR IR-cut-filter automatic day/night conversion, low-light 0.05 Lux color / 0.01 Lux B/W



Built-in WiFi

Built-in WiFi supported for convenient near-end configuration and video access



GPS/BeiDou Positioning

Built-in GPS/BeiDou positioning supported; deployment point locations viewed in real time via the management platform



Serial Transparent Transmission

Serial transparent transmission supported for easy interface with



PC Integrated Management

PC control interface provided, supporting video viewing, voice intercom, and map location display

peripherals and third-party
systems

4. Technical Specifications

4.1 Wireless Characteristics

Category	Parameter	Specification	Custom Option
Wireless Characteristics	Frequency Range	1437±15MHz	225MHz ~ 1.5GHz customizable
	Bandwidth	5 / 10 / 20MHz adjustable	—
	Modulation	COFDM	—
	Constellation Modulation	BPSK / QPSK / 16QAM / 64QAM (adaptive)	—
	Data Rate	Peak 70Mbps @ 20MHz	—
	Digital Sensitivity	-92dBm @ 5MHz	—

4.2 Camera Characteristics

Category	Parameter	Specification	Custom Option
Camera Characteristics	Video Encoding	H.265 Main Profile	—
	Minimum Illumination	Color: 0.05Lux @ (F1.6, AGC ON); B/W: 0.01Lux @ (F1.6, AGC ON)	—
	Day/Night Conversion Mode	ICR IR-cut filter	—
	Resolution	1920×1080 / 1280×720, 25fps / 30fps	—
	Optical Zoom	30X, 20X optional	—
	IR Range	60-80m	—
	Digital Zoom	12X	—
	3D Noise Reduction	Supported	—
	Image Sensor	1/2.8" high-performance progressive-scan CMOS	—

4.3 PTZ Specifications

Category	Parameter	Specification	Custom Option
PTZ Specifications	Horizontal Rotation Angle	360°	—
	Vertical Rotation Angle	-15° ~ 90°	—
	Presets	200	—
	Battery	10400mAh	—

4.4 Physical Characteristics

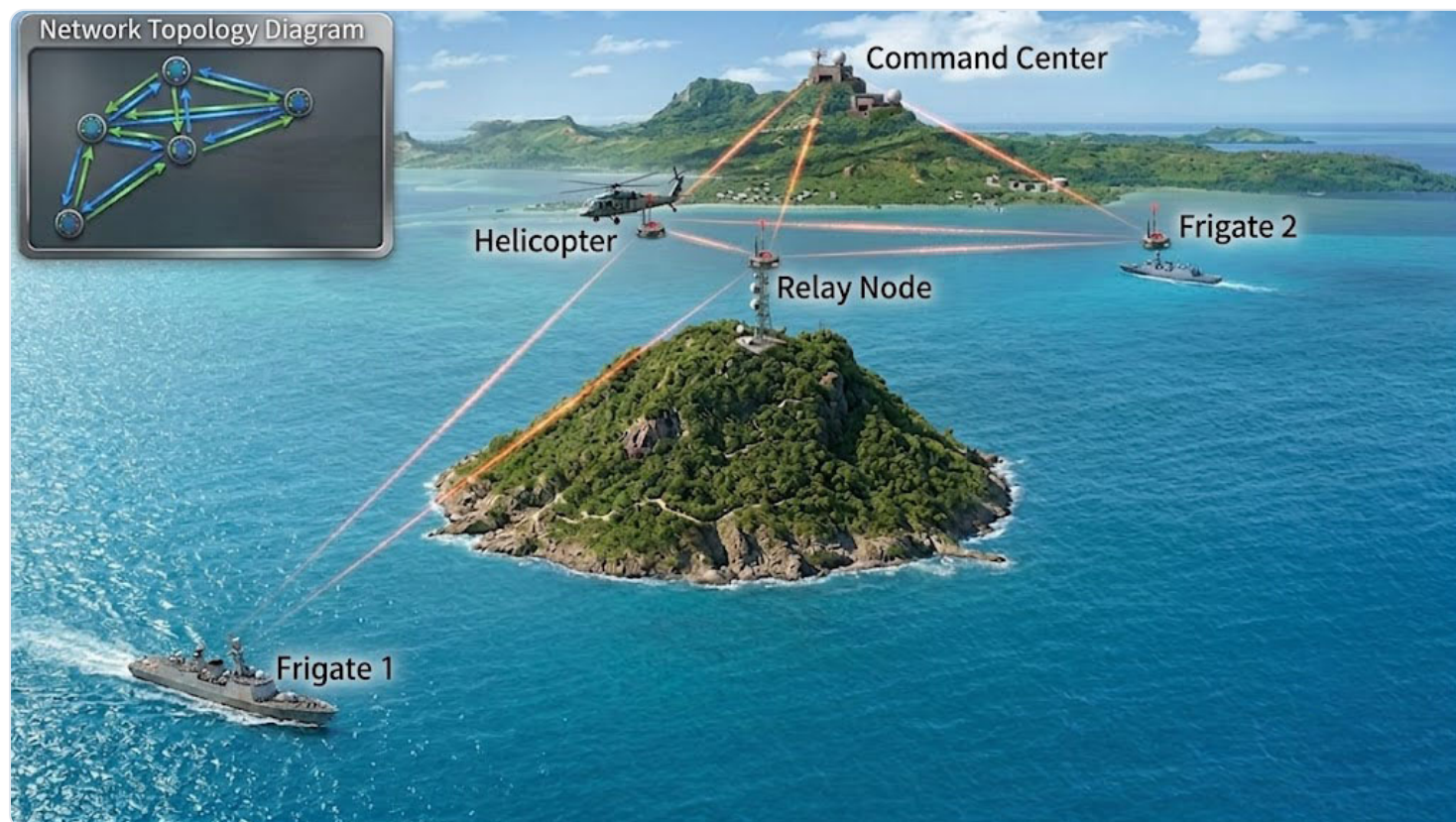
Category	Parameter	Specification	Custom Option
Physical Characteristics	Charging Time	<3 hours	—
	Operating Time	>10 hours	—
	Operating Temperature	-20°C ~ 60°C	—
	Dimensions	155 × 150 × 260mm (incl. battery)	—
	Weight	5kg (incl. battery)	—

Customization Note: This product supports a variety of customization requirements including frequency band, zoom ratio, and battery capacity. 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, subway 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

- **Temporary surveillance extension:** The YNW-6502BK surveillance dome is rapidly deployed at border outposts and temporary monitoring points; turn it on and use it with no extra power supply, freely networking with fixed border-outpost radios and patrol-boat ship-borne radios, with long point-to-point transmission distances, achieving integrated "shore-sea-outpost" coverage.
- **Multi-form-factor node convergence:** Fixed border-outpost deployment, patrol-boat ship-borne deployment, mobile command-vehicle deployment, and single-soldier handheld deployment freely self-organize, supporting 64-node Ad-Hoc networking for seamless area coverage.
- **HD video surveillance:** 30X optical zoom, 1920×1080 HD resolution, and 60-80m IR night vision deliver 24/7 border situational monitoring; H.265 encoding reduces wireless bandwidth pressure.
- **GPS/BeiDou positioning:** The surveillance dome has built-in GPS/BeiDou positioning; the network management system platform displays deployment-point geographic locations in real time, giving the command center a full picture of border surveillance.

Application Value

Between border outposts, patrol boats, and temporary deployment points, HD video, voice intercom, and situational-awareness data are backhauled in real time, keeping the command link active even in remote areas without public network coverage. The command center can grasp border dynamics, maritime situational awareness, and deployment-point status in real time, effectively enhancing border/coastal situational awareness, rapid response, and coordinated operations, providing reliable communications and surveillance 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 during convoy movement, conventional communications cannot guarantee stable real-time links between convoy members.

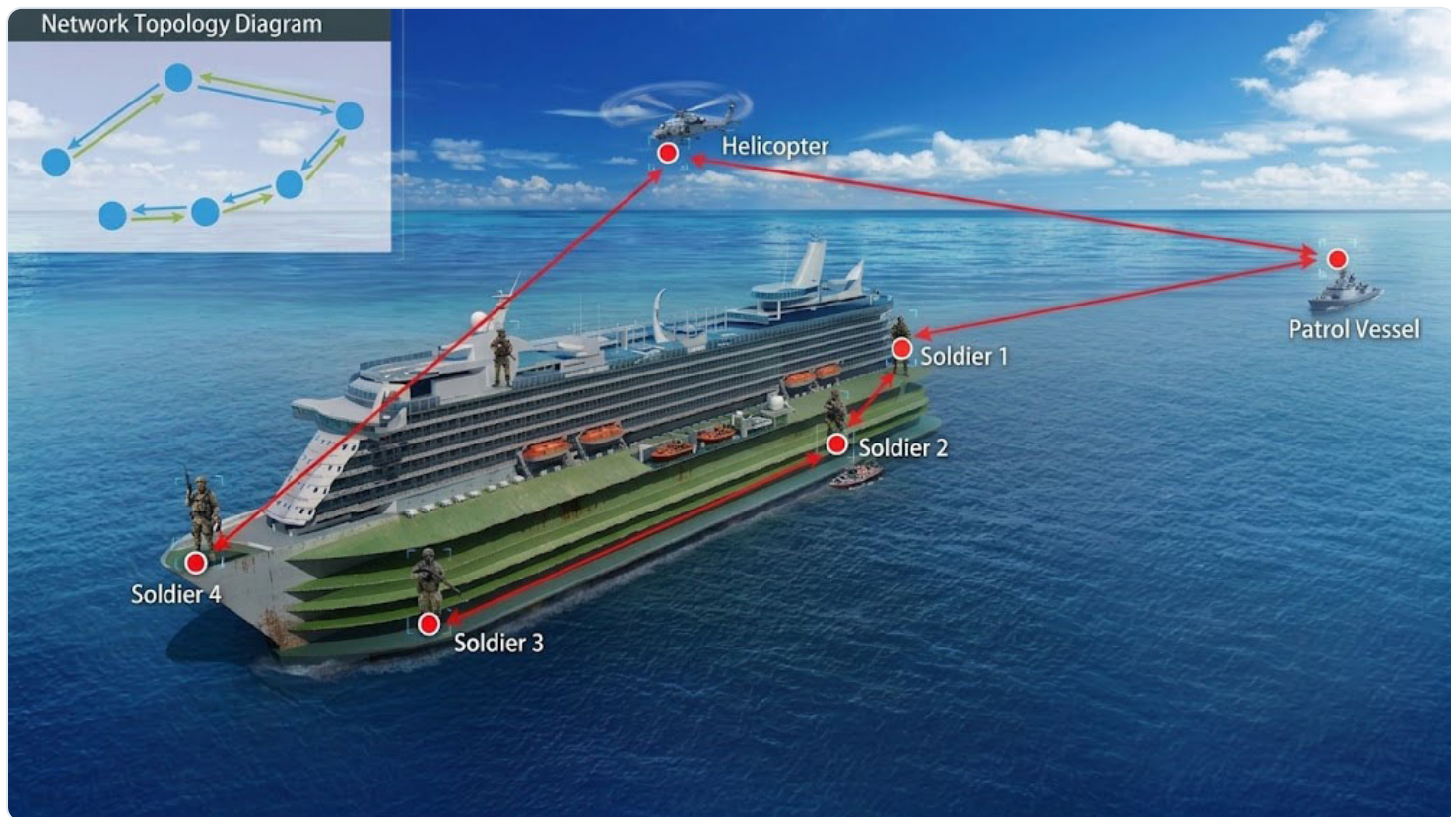
Deployment Solution

- **Along-route deployment coordination:** The YNW-6502BK is rapidly deployed at key intersections, temporary rest areas, and supply points along the convoy route, automatically networking with the convoy's vehicle-mounted MESH devices for integrated route video monitoring and convoy communications.
- **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 backhaul of deployment-point HD video, convoy voice intercom, vehicle position sharing, and command-instruction issuance, with a point-to-point throughput peak of up to 70Mbps.
- **Network transparent relay:** Supports network transparent relay to interconnect the convoy private network with the rear command center for integrated front-rear command.

Application Value

During convoy movement, HD video, voice intercom, and location information are shared in real time between vehicles and between vehicles and along-route deployment points, and the command vehicle can grasp the full fleet situation and key route nodes 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 communications and surveillance 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.

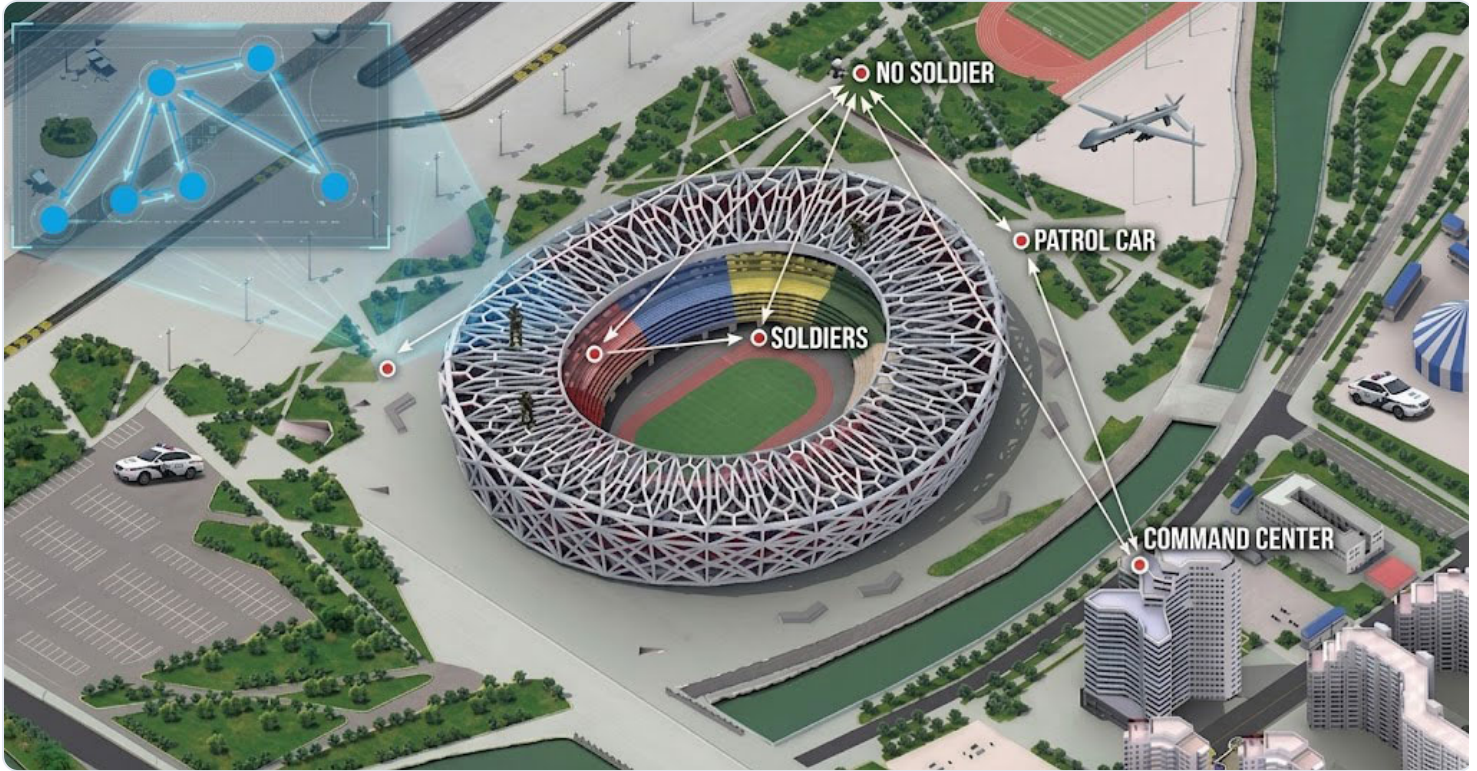
Deployment Solution

- **Port and pier deployment:** The YNW-6502BK is rapidly deployed at ports, piers, and vessel mooring points; its 30X optical zoom clearly captures the boarding process, maintaining real-time communication with the mother vessel and formation vessels and backhauling on-site boarding HD video 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 to support fleet coordinated operations and integrated communications.
- **Multipath-interference resilience:** COFDM multi-carrier 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 port deployment points and vessels, backhauling on-site HD video and voice in real time and providing reliable communications and surveillance 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 Surveillance & Armed Patrol MESH Ad-Hoc Wireless Communications



Application Scenario

Major event security (conferences, competitions, performances), temporary surveillance and interception, 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

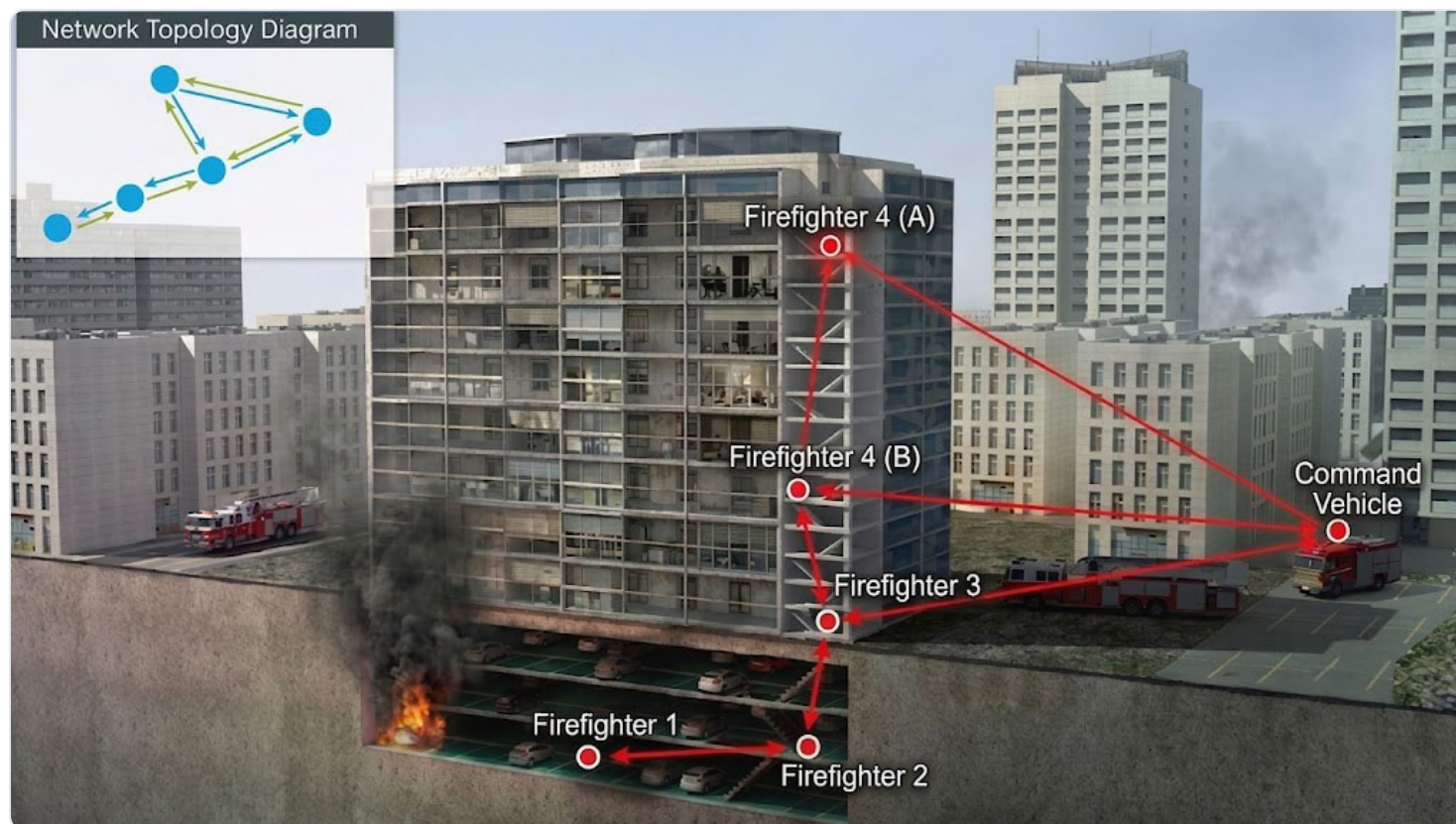
- **Rapid temporary surveillance deployment:** With its one-piece structure, built-in battery, and power-on-and-use design, the YNW-6502BK completes deployment at the task site (high vantage points, intersections, temporary monitoring points) within 5 minutes, completely independent of the public network.
- **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 center 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).
- **30X zoom long-range monitoring:** 30X optical zoom + 12X digital zoom clearly capture target details from afar, and 60-80m IR night vision supports 24/7 all-weather surveillance.
- **Network transparent relay:** Supports network transparent relay to interconnect the on-site private network with the public-security command center in areas with public coverage for integrated front-rear command.

- **PC integrated management:** PC control interface provided, supporting video viewing, voice intercom, and map location display.

Application Value

In major-event security, temporary surveillance, and armed patrol scenarios, it provides real-time on-site situational awareness for public-security command decisions, with stable backhaul of multi-channel HD video, voice intercom, and data. The centerless architecture ensures uninterrupted communications under extreme conditions such as public-network outage or congestion. The 30X-zoom surveillance dome monitors targets at long range with clarity, providing reliable communications and surveillance 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

- **High-vantage-point on-site deployment:** The YNW-6502BK is rapidly deployed at high vantage points and temporary command points at the disaster site; its 30X zoom monitors the fire scene from all angles, and multi-hop relay backhauls on-site HD video to the on-site command vehicle and rear command center in real time.
- **Rapid private network setup:** With its one-piece design, built-in battery, and power-on-and-use operation, the YNW-6502BK builds a dedicated broadband Ad-Hoc network among firefighters, surveillance domes, command vehicles, and temporary command points within 5 minutes, without any infrastructure.
- **Concurrent multi-stream video:** Supports IP video input and 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 device is damaged or moves, the network automatically reconfigures, and remaining nodes re-establish routing without communication interruption, sustaining rescue continuity.
- **IR night vision support:** 60-80m IR night vision supports 24/7 all-weather fire-scene monitoring, and ICR automatic day/night conversion adapts to complex lighting conditions.

Application Value

Enables the rear command center to grasp the full on-site picture, scientifically dispatch rescue forces, and improve rescue efficiency and safety. The surveillance dome monitors the fire scene from a high vantage point at all angles, 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 and surveillance 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:** With its one-piece design, built-in battery, and power-on-and-use operation, the YNW-6502BK lets rescue teams rapidly deploy at key disaster-area nodes (affected areas, temporary shelters, rescue routes, and danger zones) to establish temporary communications and surveillance nodes.
- **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:** Multi-hop relay 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.
- **GPS/BeiDou positioning:** The network management system platform displays rescue-team and deployment-point locations in real time, allowing the command center to track all personnel and optimize rescue routes.

- **Network transparent relay:** In areas with partial public coverage, network transparent relay interconnects the disaster-area private network with the rear command center for integrated front-rear command.

Application Value

Provides stable, reliable communications and surveillance 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 and surveillance 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

- **Forest-area deployment networking:** The YNW-6502BK is rapidly deployed at key forest-area nodes (high vantage points, forest-area entrances, flammable zones, temporary monitoring points), 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.
- **30X zoom long-range monitoring:** 30X optical zoom + 12X digital zoom clearly capture fire-point details from afar, and 60-80m IR night vision supports 24/7 all-weather forest-area monitoring.
- **Watchtower-UAV-surveillance-dome coordination:** Fixed watchtower monitoring, patrol UAV aerial inspection, and temporary surveillance domes deep in the forest form a three-position coordinated network, backhauling video and alarm information 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 temporary surveillance domes to the command center in real time for early detection, reporting, and response. During an active fire, it provides reliable communications and surveillance support for frontline command, improving coordinated suppression efficiency and firefighter safety assurance, and providing solid support for forest-resource protection and ecological security.

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