

PRODUCT SPECIFICATION

# YW-1401SW

Broadband Wireless MESH Outdoor Base Station  
Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

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2026.8 (V1.0)

**Model** YW-1401SW

**Outdoor Base Station**

**Product Name** Broadband Wireless MESH Outdoor Base Station  
Equipment

**Product Series** YW-1400 Series MESH Self-organizing Network  
Equipment

**Core Technology** COFDM + MESH Multi-hop Ad-hoc Network

## 1. Product Overview

**Product Positioning:** The YW-1401SW is a compact, high-throughput outdoor broadband wireless MESH self-organizing network device, developed on the basis of COFDM technology and MESH multi-hop self-organizing network technology. It enables free networking between different product form factors, delivering a fast and flexible solution that allows users to rapidly establish reliable wireless links in complex environments.

The YW-1401SW broadband wireless MESH outdoor base station is a newly released compact, high-throughput outdoor wireless broadband MESH device from our company. Developed on the basis of COFDM technology and MESH multi-hop self-organizing network technology, it enables free networking across different product form factors, providing users with a quick and flexible solution for building reliable wireless links in complex environments to support various business needs such as HD video, voice intercom and IP data transmission.

As a broadband self-organizing network (Mesh) radio that enables centerless self-organization, self-adaptation and self-healing, the YW-1401SW is the best choice for point-to-point, point-to-multipoint or multipoint-to-multipoint integrated business communications. The Mesh radio enables HD video, multi-channel data and high-fidelity voice transmission between different nodes in the same network through dynamic routing and multi-hop relay under complex application conditions such as fast movement, non-line-of-sight occlusion and environmental interference.

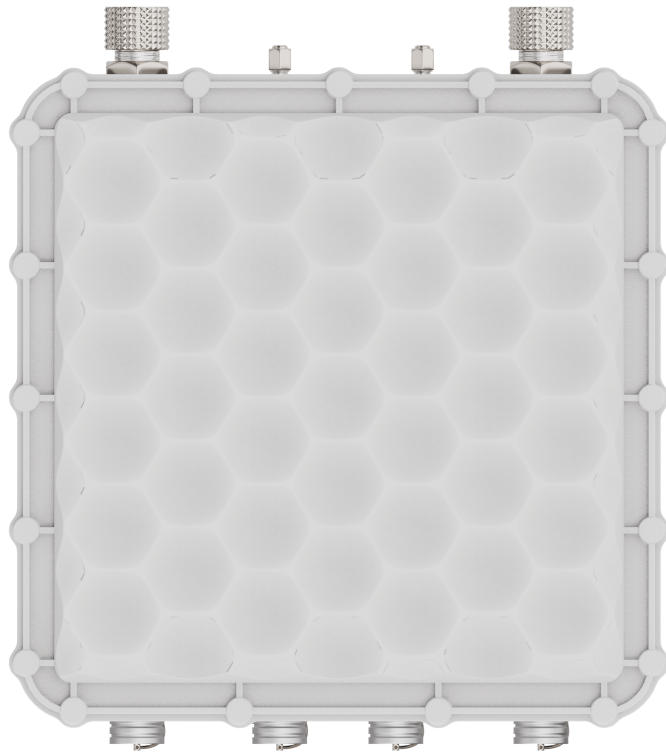
Featuring an all-IP design with flexible installation, convenient operation and easy maintenance, it supports a variety of frequency band customization and can be extended with WIFI, GPS and 3G/4G functions to support integrated communication requirements.

- **Key Selling Points:** Multi-carrier COFDM technology; up to 70Mbps point-to-point peak throughput; more than 10km point-to-point transmission distance (line of sight)
- **Target Users:** System integrators and engineering contractors for military communications, public safety, emergency communications and industry-specific private networks
- **Application Scenarios:** military communications, counter-terrorism, public security enforcement, security operations, emergency rescue, fire control command, forest fire prevention, forest area monitoring, civil defense/earthquake response, power inspection, digital oilfield, UAV swarms, fleet intercommunication, naval task force, maritime communications, airport ground services, subway emergency, highway construction, hydrological monitoring, mobile broadcasting, healthcare and more

**Design Features:** All-IP design with flexible installation, convenient operation and easy maintenance; multiple frequency band customization options; extension with WIFI, GPS, 3G/4G functions to support integrated communication requirements.

## 2. Product Views

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YW-1401SW Broadband Wireless MESH Outdoor Base Station Equipment

### 3. Key Features

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#### Multi-carrier COFDM Technology

Up to 70Mbps point-to-point peak throughput and more than 10km point-to-point transmission distance (line of sight)



#### Multi-hop MESH Self-organizing Network

Automatic networking and route calculation without manual intervention; supports 32-node self-organizing networking with automatic multi-hop transmission for seamless regional coverage



#### Portable and Easy to Use

Ready to use upon power-on with no setup required; supports mobile phone and Web-based configuration for remote management



#### Customizable Options

Transmit power adjustable from 0.1-2W; operating frequency band from 200MHz-2.4GHz customizable; signal bandwidth 5/10/20MHz adjustable



#### HD Video and Voice

Supports IP video input with H.265/H.264 video compression; HDMI/AV/VGA/SDI input customizable; supports voice intercom



#### High-protection Outdoor Design

IP65 protection rating and -20°C to 55°C operating temperature for reliable performance in harsh outdoor environments

## 4. Technical Specifications

### 4.1 Wireless Characteristics

| Item                     | Parameter             | Specification                          | Customization                |
|--------------------------|-----------------------|----------------------------------------|------------------------------|
| Wireless Characteristics | Frequency Range       | 1400-1470 ± 15MHz                      | 200MHz ~ 1.5GHz customizable |
|                          | Bandwidth             | 5 / 10 / 20 MHz adjustable             | —                            |
|                          | Modulation            | COFDM / OFDM                           | —                            |
|                          | Constellation         | BPSK / QPSK / 16QAM / 64QAM (adaptive) | Fixed rate customizable      |
|                          | Data Rate             | Peak 70Mbps @ 20MHz                    | —                            |
|                          | RX Sensitivity        | -92dBm @ 5MHz                          | —                            |
|                          | Transmission Distance | >10km (line of sight)                  | —                            |
|                          | Transmit Power        | 20~30dBm per path (adjustable)         | Power customizable           |

### 4.2 Networking

| Item       | Parameter                        | Specification                                  | Customization               |
|------------|----------------------------------|------------------------------------------------|-----------------------------|
| Networking | Networking Capability            | Supports 16 nodes                              | Up to 32 nodes customizable |
|            | Multi-hop                        | >8 hops                                        | —                           |
|            | Network Topology                 | Centerless network, star, chain, mesh and more | —                           |
|            | Network Transparent Transmission | Supported                                      | —                           |

### 4.3 System Functions

| Item             | Parameter           | Specification                                 | Customization                            |
|------------------|---------------------|-----------------------------------------------|------------------------------------------|
| System Functions | External Interfaces | Ethernet port, headset/mic                    | —                                        |
|                  | Video Input         | Supports IP video input                       | HDMI / AV / VGA / SDI input customizable |
|                  | Video Compression   | H.265 / H.264                                 | Customizable                             |
|                  | Control             | Supports network management system platform   | —                                        |
|                  | System Upgrade      | Supports one-click upgrade and remote upgrade | —                                        |
|                  | Other Functions     | GPS / Beidou, WIFI                            | —                                        |

4.4 Physical Characteristics

| Item                     | Parameter             | Specification            | Customization |
|--------------------------|-----------------------|--------------------------|---------------|
| Physical Characteristics | Power Consumption     | ≤ 7W                     | —             |
|                          | Power Supply          | DC 14.6-14.8V or AC 220V | —             |
|                          | Operating Temperature | -20°C ~ 55°C             | —             |
|                          | Operating Humidity    | 10% ~ 90%                | —             |
|                          | Protection Rating     | IP65                     | —             |
|                          | Dimensions            | 198 × 198 × 46 mm        | —             |
|                          | Weight                | < 2.1kg                  | —             |

## 5. Features & Functions

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**Overview:** The YW-1401SW broadband wireless MESH outdoor base station is built on multi-carrier COFDM and MESH multi-hop self-organizing network technology. It provides automatic networking, automatic route calculation and multi-hop relay, with point-to-point peak throughput of up to 70Mbps. It supports 32-node seamless regional coverage and offers a range of customization options for frequency band, transmit power and bandwidth to meet integrated communication requirements.

- **Multi-carrier COFDM technology:** strong resistance to multipath interference and diffraction for reliable transmission in complex environments;
- **High throughput:** up to 70Mbps point-to-point peak throughput to meet the concurrent demands of HD video and multi-channel data;
- **Long-distance transmission:** point-to-point transmission distance of more than 10km (line of sight);
- **Multi-hop MESH self-organizing network technology:** automatic networking and automatic in-network route calculation without manual intervention, effectively saving manpower and resources;
- **Seamless regional coverage:** supports 32-node self-organizing networking with automatic multi-hop transmission for seamless regional coverage;
- **Portable and easy to use:** ready to use upon power-on with no setup required; supports mobile phone and Web-based configuration for remote management;
- **Customizable options:** transmit power 0.1-2W adjustable, operating frequency band 200MHz-2.4GHz customizable, signal bandwidth 5/10/20MHz adjustable;
- **Network transparent transmission:** supported for seamless integration with existing service platforms;
- **Intelligent management:** supports network management system platform control, one-click upgrade and remote upgrade for easy maintenance.

## 6. Applications

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Based on MESH self-organizing network technology, this product can be flexibly applied to military communications, public safety, emergency communications, industry information private networks, regional broadband private networks, wireless surveillance private networks, coordinated management private networks and intelligent transmission private networks. It provides stable, reliable and timely high-definition video, multi-channel data, clear voice and visualized command and dispatch services for military communications, counter-terrorism, public security enforcement, security operations, emergency rescue, fire control command, forest fire prevention, forest area monitoring, civil defense/earthquake response, power inspection, digital oilfield, UAV swarms, fleet intercommunication, naval task force, maritime communications, airport ground services, subway emergency, highway construction, hydrological monitoring, mobile broadcasting and healthcare.

## 1. Border & Coastal Defense MESH Self-organizing Network Application



### Application Scenario

Long-distance, wide-coverage border and coastal defense communication scenarios such as border patrol, coastal surveillance, border port control, coastline warning, border post interconnection and maritime law-enforcement fleet communications. With China's long and complex land borders and coastline covering mountains, gobi, jungles and islands, the public network cannot fully cover all areas, and there is an urgent need for dedicated broadband communication to ensure border and coastal defense command and dispatch.

### Deployment Scheme

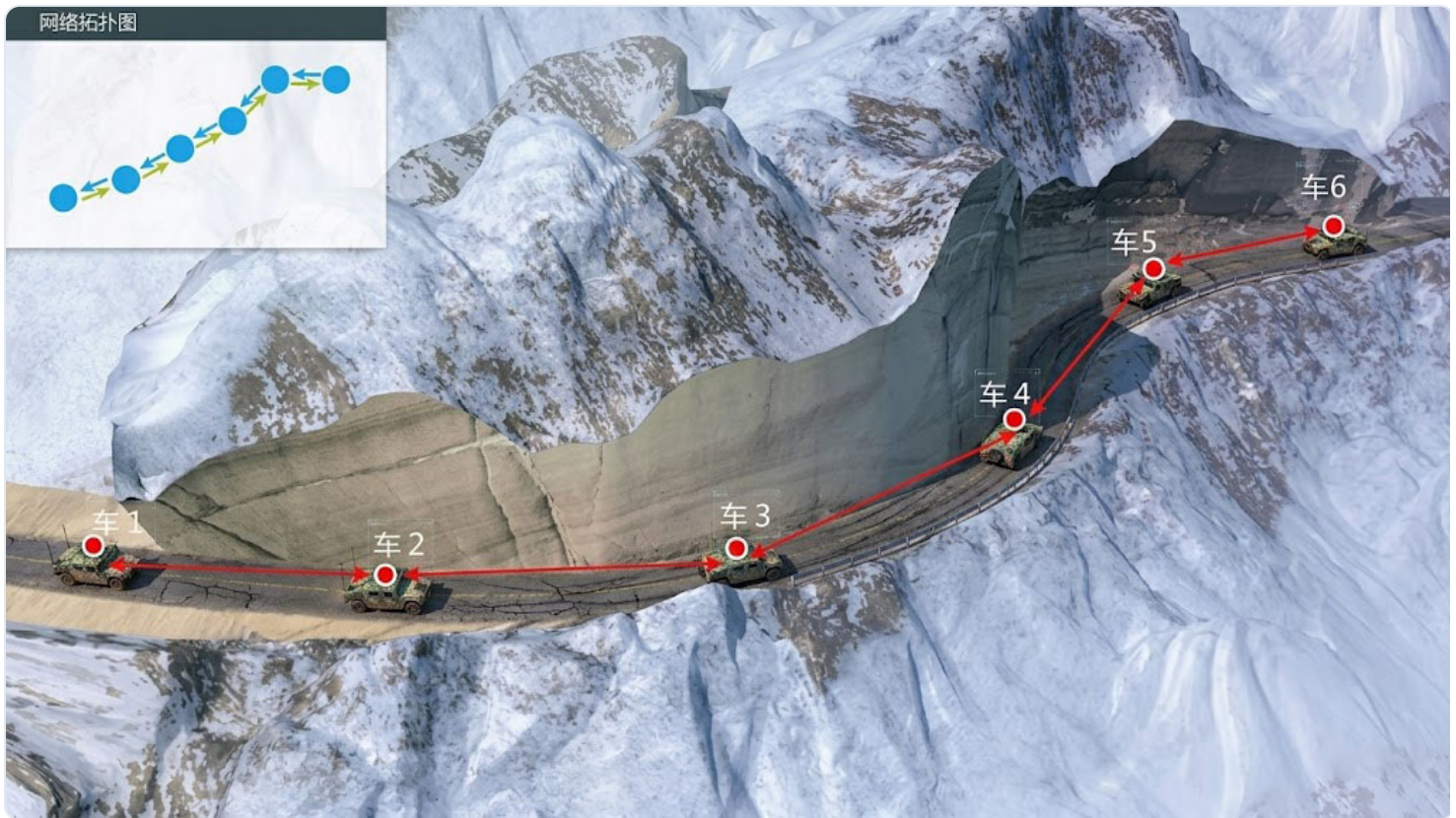
- **Multi-hop cascade deployment:** YW-1401SW outdoor base stations are deployed in a cascade along the border or coastline at intervals of 10km, with single-hop line-of-sight transmission of more than 10km. Multi-hop relay builds a centerless broadband private network covering tens to hundreds of kilometers.
- **Diverse node forms:** fixed deployment at border posts, shipborne deployment on patrol boats, vehicle-mounted deployment on mobile command vehicles and manpack deployment on patrol soldiers interconnect freely to achieve integrated air-sea-land coverage.
- **IP65 protection:** the device meets the requirements of long-term operation in harsh outdoor environments, with an operating temperature range of -20°C to 55°C and resistance to high salinity, high humidity and strong wind and sand typical of border and coastal areas.

### Application Value

Border posts, patrol boats and mobile command vehicles can transmit HD video, voice intercom and situational-awareness data in real time, keeping command links unbroken even in remote areas without public network

coverage. The command center can grasp the latest border and sea situation in real time, effectively improving border and coastal defense situational awareness, rapid response and coordinated operations.

## 2. Convoy MESH Self-organizing Network Application



### Application Scenario

Mobile scenarios such as convoy formation, military escort and transportation, material transport, VIP convoy security, long-distance passenger fleet management, logistics fleet coordination and railway engineering vehicle communication. During movement, the distance between vehicles keeps changing and the road environment is complex and variable, making it difficult for traditional communication methods to guarantee stable real-time communication between vehicles.

### Deployment Scheme

- **Direct vehicle-to-vehicle networking:** each vehicle deploys one YW-1401SW vehicle-mounted base station, and vehicles automatically establish a MESH self-organizing network link without relying on fixed base stations or the public network.
- **Dynamic route convergence:** under complex conditions such as high-speed movement, changing inter-vehicle distance, road occlusion and tunnel transit, the network topology automatically reconfigures and routes converge within seconds without interrupting communication.
- **Multi-service concurrency:** supports concurrent transmission of vehicle HD video backhaul, voice intercom, vehicle location sharing and command instruction delivery, with peak throughput of 70Mbps for broadband services.
- **Relay extension:** when the convoy is large or terrain occlusion is severe, multi-hop relay can extend coverage, supporting 16 nodes (up to 32 nodes customizable).

### Application Value

During convoy movement, HD video, voice intercom and location information are shared between vehicles in real time, and the command vehicle grasps the overall fleet situation for integrated formation command and coordinated dispatch. In tasks such as counter-terrorism, armed escort and military material transport, it provides a dedicated secure communication channel independent of the public network, significantly enhancing mobile command capability and mission security.

### 3. Boarding Reconnaissance MESH Self-organizing Network Application



#### Application Scenario

Maritime task scenarios such as ship boarding inspection, reconnaissance and evidence collection, cross-vessel coordinated operations, naval task force communication, maritime law-enforcement boarding, coast guard patrol and naval tactical coordination. The maritime communication environment is special, with wave tossing, severe multipath interference and constantly changing relative positions between vessels, making stable communication difficult with traditional means.

#### Deployment Scheme

- **Vessel-to-vessel coordinated networking:** each vessel deploys YW-1401SW base stations, and vessels automatically establish a broadband MESH self-organizing network link for coordinated operations and integrated communication.
- **Boarding team extension:** the boarding inspection team is equipped with portable MESH devices that maintain real-time communication with the mother ship's base station, transmitting live HD video and voice from the boarding site back to the mother ship's command center.
- **Multipath interference resistance:** COFDM modulation effectively suppresses sea-surface multipath reflection interference and maintains link stability under highly dynamic conditions such as wave tossing and vessel pitching.
- **Fast route convergence:** the device supports fast route convergence in highly dynamic environments, automatically adjusting the network topology as vessels move relative to each other without interrupting communication.

#### Application Value

During ship boarding inspection, reconnaissance and evidence collection and cross-vessel coordination, a stable maritime broadband self-organizing network link is established between vessels and between vessels and boarding teams, transmitting HD video and voice in real time to provide reliable communication support for maritime law enforcement, search and rescue and tactical coordination.

## 4. Public Security Control & Armed Patrol MESH Self-organizing Network Application



### Application Scenario

Public security scenarios such as major event security (conferences, events, performances), temporary control and arrest operations, armed patrol, counter-terrorism, public-order incident response, VIP protection, checkpoint inspection and special operations. Such scenarios place extremely high demands on rapid deployment, temporary private networking, multi-channel video backhaul and resilience to public network congestion.

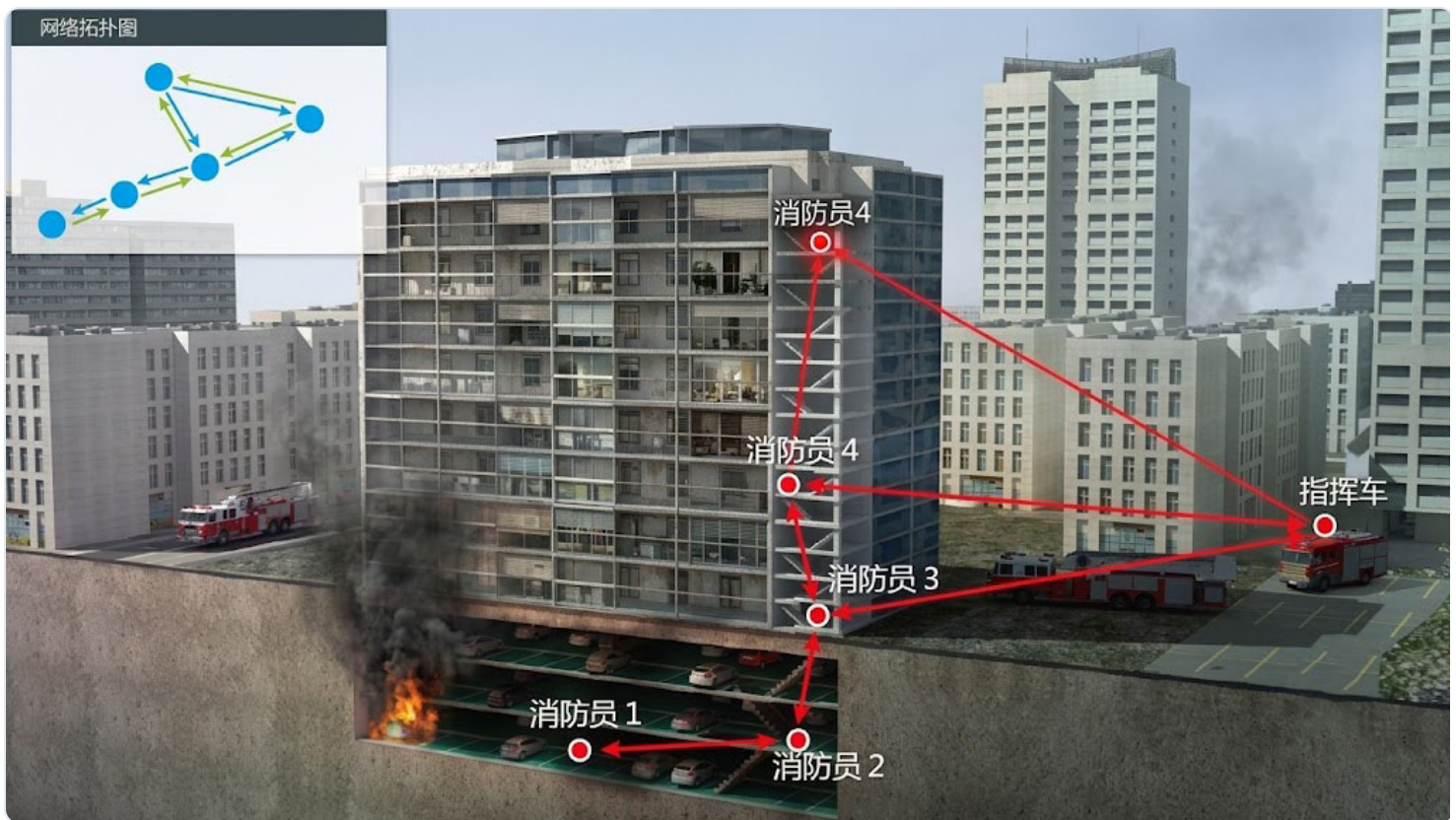
### Deployment Scheme

- **Rapid temporary private network:** YW-1401SW is ready to use upon power-on without setup, allowing a dedicated broadband communication network to be set up quickly at the task site, completely independent of the public network.
- **Multi-terminal integrated access:** various terminal forms such as individual body-worn cameras, vehicle-mounted terminals, temporary surveillance balls and UAV aerial relays access through the MESH self-organizing network, transmitting multiple video feeds back to the command center in real time.
- **Centerless architecture:** the centerless self-organizing network architecture does not rely on public network base stations and remains operational during network congestion or public network outage (such as congestion caused by dense crowds at large events).
- **Remote management:** supports mobile APP and Web network management platform for remote configuration and management, so the command center can manage all nodes and monitor network status in real time.
- **Network transparent transmission:** supports transparent transmission for seamless integration with existing public security command and dispatch systems and video surveillance platforms.

## **Application Value**

In major event security, temporary control and armed patrol scenarios, it provides real-time site situational awareness for public security command and decision-making, with stable backhaul of multiple HD video feeds, voice intercom and data. The centerless architecture ensures uninterrupted communication even in extreme situations such as public network outage or congestion, providing reliable communication support for counter-terrorism and emergency command.

## 5. Firefighting & Rescue MESH Self-organizing Network Application



### Application Scenario

Communication support at disaster sites such as firefighting (building, forest and chemical fires), earthquake rescue, incident emergency response, hazardous chemical leakage, traffic accident rescue and building collapse rescue. The public network at disaster sites is often interrupted or severely congested, requiring dedicated communication means to support rescue command.

### Deployment Scheme

- **Rapid on-site deployment:** YW-1401SW can be quickly erected at the disaster site to build a dedicated broadband self-organizing network among firefighters, command vehicles and temporary command points without any infrastructure support.
- **Firefighter-vehicle-command three-tier networking:** firefighters wearing portable MESH devices go deep into the fire scene and relay via vehicle-mounted base stations, transmitting HD video from the fire interior back to the on-site command vehicle and the rear command center in real time.
- **Multi-channel video concurrency:** supports concurrent backhaul of multiple HD video feeds, allowing the command center to view real-time images of multiple fire sources and rescue teams simultaneously.
- **Self-healing and damage resistance:** when a node device is damaged or moves, the network reconfigures automatically and the remaining nodes re-establish routes without interrupting communication, ensuring continuity of rescue operations.
- **IP65 protection:** the device meets the requirements of harsh fire-scene environments such as high temperature, heavy smoke and water spray, ensuring stable operation during rescue.

### Application Value

It helps the rear command center grasp the overall site situation, scientifically dispatch rescue forces and improve rescue efficiency and safety. Firefighters receive command instructions, backhaul on-site video and communicate with the command center by voice in real time, avoiding blind action and maximizing firefighter safety and rescue effectiveness.

## 6. Natural Disaster Emergency Command MESH Self-organizing Network Application



### Application Scenario

Emergency command communication support for sudden natural disasters such as earthquakes (especially those above magnitude 7), floods (peak passage, dam breach and urban waterlogging), mudslides, landslides, typhoons, snowstorms and freezing rain. Such disasters often destroy large-scale communication infrastructure, causing total public network outage and leaving emergency command facing an "information island".

### Deployment Scheme

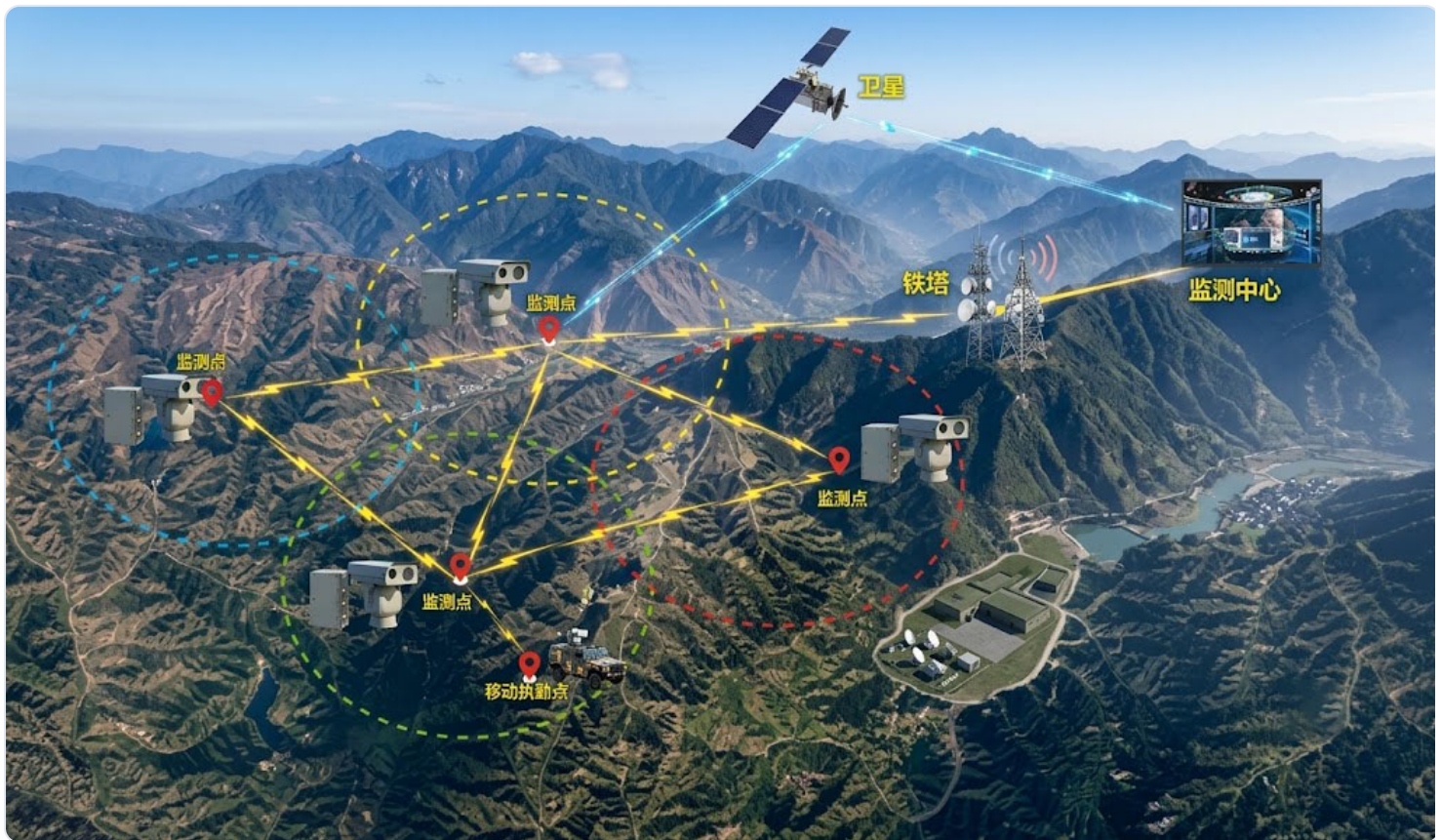
- **Rapid erection in disaster areas:** rescue teams carry YW-1401SW devices into the disaster area to quickly set up temporary communication nodes, using multi-hop relay to achieve wide-area coverage and overcome terrain barriers.
- **Air-ground integrated networking:** combined with UAV aerial relay platforms, an air-ground three-dimensional self-organizing network is built to overcome terrain restrictions in mountainous and rubble areas and achieve full coverage of the disaster area.
- **Wide-area multi-hop relay:** supports more than 8 hops of relay, with single-hop distance of over 10km, enabling tens of kilometers of coverage through cascade relay to meet the communication needs of large disaster areas.
- **Self-healing and damage resistance:** the self-healing feature ensures the network reconfigures automatically when nodes move, devices are damaged or new nodes join, requiring no manual intervention for continuous reliable communication support.
- **Multi-service integration:** supports concurrent transmission of on-site video backhaul, disaster data reporting, rescue team location sharing, command instruction delivery and victim help-request collection.

- **Front-rear linkage:** the on-site command post links with the provincial/national emergency command centers behind via satellite for real-time coordinated command.

### **Application Value**

Facing sudden natural disasters, it provides stable and reliable communication support for emergency command and dispatch, transmitting information such as on-site video, disaster data and rescue team locations back to the front and rear command posts in real time. The command center can grasp the overall disaster situation and scientifically dispatch rescue forces to improve rescue efficiency.

## 7. Forest Fire Prevention MESH Self-organizing Network Application



### Application Scenario

Forest fire prevention and monitoring, forest patrol communication, watchtower interconnection, fire-suppression frontline command, fire-scene situation backhaul, forest wildlife protection and forest area public security management. China's vast forest resources are mostly distributed in mountainous and remote areas with weak public network coverage, and forest fire communication has long faced challenges in coverage, networking and cost.

### Deployment Scheme

- **Multi-point deployment in forest areas:** YW-1401SW can be deployed at key points such as forest watchtowers, fire prevention checkpoints and management stations to build a broadband self-organizing private network covering vast forests.
- **Multi-hop relay to overcome terrain:** multi-hop relay overcomes forest occlusion and terrain undulation to achieve wide coverage in hilly, mountainous and canyon areas, with single-hop line-of-sight distance of over 10km.
- **Watchtower-UAV-firefighter coordination:** fixed surveillance at watchtowers, aerial patrol by UAVs and firefighters entering the fire scene coordinate seamlessly, transmitting video and alarm information back to the fire prevention command center in real time.
- **IP65 high protection:** the IP65-rated device adapts to outdoor exposure to wind and rain and large temperature differences in forest environments, supporting 7×24-hour long-term stable operation.
- **Automatic fire alarm:** interconnecting with smoke detectors and thermal imaging fire-detection equipment, automatic fire alarm information is transmitted back to the command center in real time through the MESH

network for early detection, reporting and response.

### **Application Value**

A broadband self-organizing private network covering vast forests is built, transmitting video and alarm information from watchtowers, patrol UAVs and firefighting frontlines back to the fire prevention command center for early detection, reporting and response. During fires, it provides reliable communication for front-line firefighting command, improving coordination efficiency and firefighter safety, and providing solid communication support for forest resource protection and ecological security.