LIGHTCOM

Reliability in Every Call

Mine Emergency
Broadcast & Communication System

Solution

Reliability in Every Call



Reliability in Every Call

One-Stop Emergency Intercom Solution

In mining operations, a reliable communication system is fundamental for safety and personnel protection. Stable and efficient emergency communication enables rapid incident response and improves overall operational safety management.



Nationwide High-Reliability,
Zero-Dead-Zone Safety Communication Network



Enhance Emergency Response
Rapid Incident Handling



Intelligent Early-Warning Integration
Comprehensive Mine Safety Protection

Overall Solution Design

System Architecture Design

The system features a three-tier architecture with dual transmission backup and multi-module integration. Built on SIP, it combines wired and wireless links for seamless communication between disaster sites, underground bases, and surface command. It integrates with existing emergency systems to form a full “collection → transmission → dispatch → rescue → traceability” emergency communication chain.



Control Layer (Dispatch Platform)

The central layer acts as the core control hub at the mine command center, responsible for receiving emergency requests, dispatching resources, and integrating with video surveillance, broadcasting, and fire protection systems to enable centralized management, unified command, and efficient, controllable emergency communications.

Underground Communication Terminals

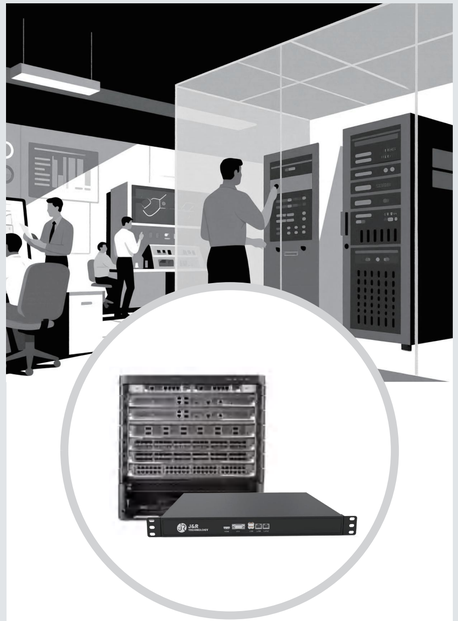
The terminal layer, as the system’s front end, handles emergency calls and collects voice and location data. Supporting wired/wireless terminals and external gateways, it covers dispatch, on-site, and external communications, fully meeting mine emergency needs.

Transmission Layer (Communication Network)

As the system’s core transmission layer, it uses a dual-link design with fiber as the primary path and wireless backup to ensure stable and reliable communications. Industrial-grade switches connect all terminals, enabling continuous, high-speed voice and data transmission in complex mining environments.

Reliability in Every Call

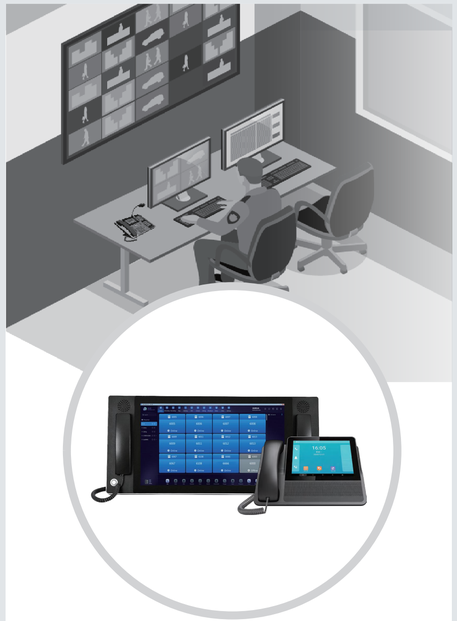
Professional Communications · Securing Mine Emergency Safety



Equipment Room

Equipped with servers, switches, and external gateways.

Based on SIP, it supports concurrent calls, group calls, call transfer, recording, and data analytics. Connected via mine fiber for surface–underground interconnection and supports remote incident reporting over public networks.



Dispatch & Command Center

Equipped with dispatch hosts, desktop phones/computers, and software.

Visualized dispatching shows real-time terminal status, calls, environmental data, and audio/video feeds, enabling fast command issuance, emergency handling, and resource coordination.



Underground Terminals

Equipped with waterproof intercoms and broadcast telephones.

Deployed at key underground sites—workfaces, refuge chambers, tunnels, and equipment rooms—integrated with the emergency broadcast system for unified call-and-broadcast dispatch, improving response efficiency.



Underground Terminals

Explosion-Proof broadcast telephones

Designed for underground hazardous, dusty, and humid conditions. Fiber-connected and wall-mounted, it offers one-touch calling, hands-free use, and emergency broadcast, directly linking to the dispatch center.



Broadcast Terminal

Equipped with SIP waterproof/explosion-proof speakers (optional)

Covers all key areas—shaft entrances, underground workfaces, tunnels, and refuge chambers. Supports remote voice alerts or instructions and automatic/manual playback of preset audio during alarms.

Mine Communication Topology

Supports multi-level access and real-time monitoring, controlling voice, broadcast, and alarms. Underground personnel can request help via wired or wireless terminals, with the dispatch center responding in real time.

■ Multi-Party Coordination, Efficient Rescue

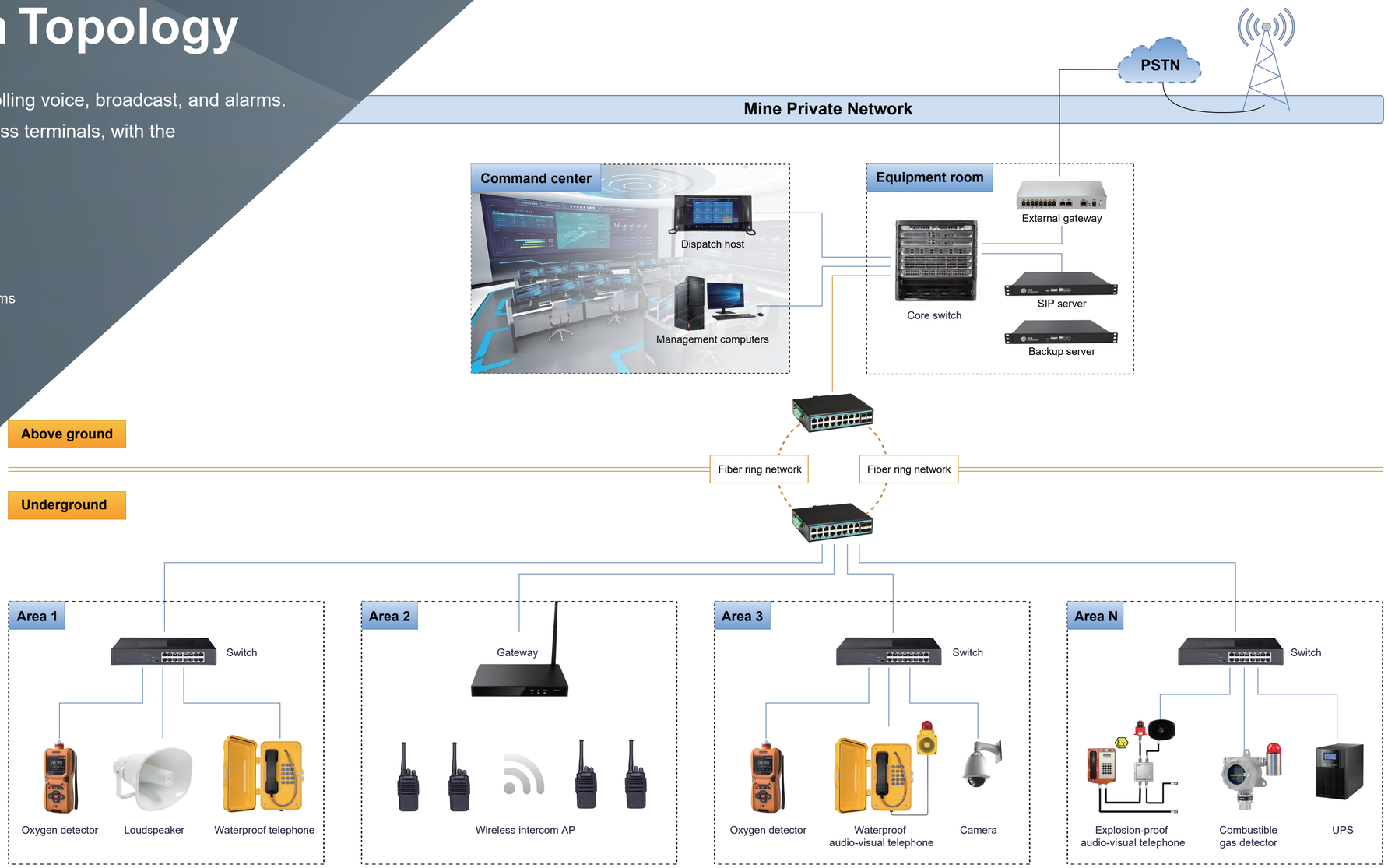
Integrates with monitoring, emergency broadcast, and rescue dispatch systems to enhance response efficiency

■ Intuitive Interface, Easy Maintenance

Visual status and self-checking allow quick inspection and fault handling

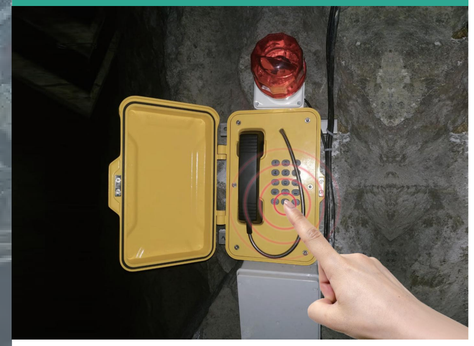
■ Reliable & Durable

Handles heat, humidity, and dust with clear, stable communication.



Fast Access · Visible & Controllable

One-Touch Help, Second-Level Response



Any terminal can call the dispatch host with one touch; the call auto-rings within 3 seconds and displays the help location and live feed, enabling “instant connection” for rapid emergency response.

Two-Way Communication Zonal Broadcast



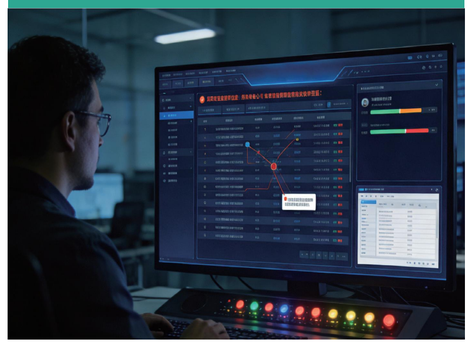
The dispatch console enables real-time communication with underground personnel and terminals, synchronizing commands and feedback. Safety and emergency broadcasts can target specific areas, with alarms switching to broadcast mode.

Integrated with monitoring, broadcast, and security systems



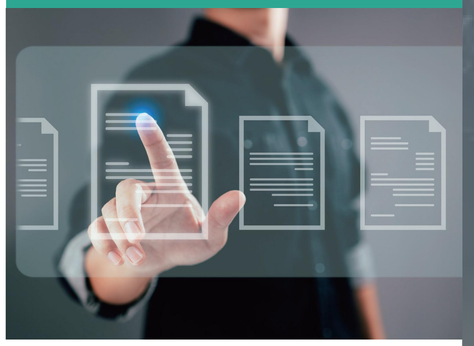
Alarms automatically trigger corresponding cameras in full-screen; in emergencies, the dispatch center remotely controls passages, and one-touch activation triggers audio-visual alarms and emergency broadcasts.

Self-Diagnosis, Easy Maintenance



The system monitors terminal status and test times, alerts faults in real time, supports remote diagnostics, and generates maintenance reports, reducing inspection costs and ensuring long-term reliability.

Data Logging for Analysis



Records usage, calls, faults, and maintenance logs, with Excel export for operational analysis, event review, and management optimization.

Our specialized communication solutions are fully validated



01 Kazakhstan Underground Mine

Equipped with aluminum alloy die-cast rugged phones offering water, dust, corrosion, and vandal resistance. Industrial-grade components operate reliably from -40˚C to 65˚C, with metal conduit design suited for high-protection and heavy industrial environments.



02 Russian Coal Transfer Station

Based on SIP, using industrial explosion-proof phones meeting Ex standards. Supports HD noise-canceling calls and IP66 protection, reliably operating in dust, moisture, mud, and high-vibration environments.



03 Mexico Underground Gold Mine

Uses aluminum alloy die-cast waterproof phones with corrosion and vandal resistance, operating reliably from -40˚C to 65˚C. Integrated outdoor speakers support remote voice alerts, emergency broadcasts, and alarm-linked playback.



04 South Africa Metal Mine

Deployed with aluminum alloy rugged phones and phone booths, providing isolated, high-definition call environments. Designed for high-protection, heavy industrial operations, the solution allows rapid deployment to ensure smooth communication and emergency response.

Our specialized communication solutions are fully validated

5 Finland Gold Mine

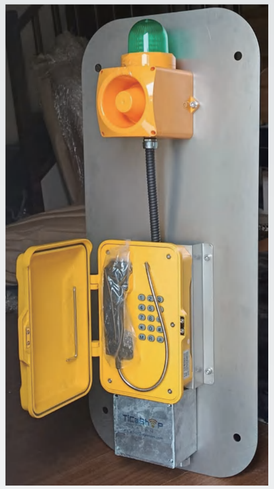
6 Serbia Underground Copper Mine

7 Chile Copper Mine

8 Russia Copper Mine

9 Zimbabwe Mine







10 Brazil Gold Mine

11 Mali Underground Gold Mine

12 Colombia Coal Mine

13 Switzerland Copper Mine

14 Mexico Coal Mine

Covering Multiple Scenarios, Empowering Industry Upgrades



Mining industry



Oil refinery



Heavy industry



Metallurgy



Chemical industry



Offshore drilling platform



Oil field



Nuclear power plant

Mine Emergency Broadcast & Communication System

Product Overview



Reliability in Every Call

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Dedicated IP Server – Stable & Efficient





Easy Web Management

JRTNS supports backend web-based configuration for simplified management.

Multifunctional Communication Tools

Intercom Functions: Two-way talk, zoned conference, talk-in, talk-out, monitoring, intercom recording

Broadcast Functions: Instant, music, or voice broadcast; zoned, full-area, and text broadcasting

Powerful Third-party Integrated Solution

Built on SIP, it seamlessly integrates with mine safety, emergency broadcast, personnel tracking, and rescue dispatch systems, breaking information silos and improving coordinated response.

Self-testing Function for Emergencies

Auto-detects on-site device status, quickly locates faults, ensures uninterrupted mining dispatch, and enables efficient resolution of mining emergency incidents.

Site Communication & Dispatch Platform





Multi-function Integration

Combines mining voice dispatching, zone broadcasting, video linkage & emergency alert triggering, for all mining operation scenarios.

Clear & Flexible Management

Offers a clear and flexible software interface for the centralized control of on-site mining communication devices.

Wide Platform Compatibility

Fully compatible with mine management systems, seamless integration with existing mining infrastructure, stable operation in high-intensity mining conditions.

Comprehensive Communication Features

Full call functions, supports 3-way conferences, video calls, forwarding, waiting, auto-answering for mine emergency scenarios.

Reliability in Every Call

Weatherproof Phones for Noisy Environments



IP67 IK10 IP66



IP66-67 Water Protection Grade

Die-cast aluminum alloy body with IP66 / IP67 rating, IK10 impact resistance, and corrosion-resistant hardware,
endures -40°C~75°C, saltwater, dust, and vandalism.

Easy Web Management

Configurable via browser with adjustable audio settings for remote, hassle-free maintenance.

- Optional programmable speed-dial

Intelligent Integration

Phones and cameras connect via the same Ethernet ring; alarms automatically trigger live feeds to the dispatch console.

Broadcast & Alarm Solution Integration

Supports external audible-visual alarm beacon ensuring crystal-clear incoming call notifications in noisy industrial environments.

Reliability in Every Call

Your Safety Guardian for Explosive Environments



IP66 IK10



ATEX Audible and Visual Alarm Integration

All-in-one **ATEX and IECEx** certified solution ensures reliable communication and timely alerts in explosive environments, simplifying deployment and boosting safety.

Redefine Safe Communication in Hazardous Zones

Certified with the **ATEX, IECEx, EAC and INMETRO**, JREX106 series demonstrates compliance with:

Ex eb ib [ib Gb] mb IIC T6/T5 Gb

Ex ib [ib Db] tb IIIC T80℃/T95℃ Db

Strong Anti-Interference

Features a noise-cancelling mic and G.168-compliant echo cancellation, delivering crisp, stable communication in high-interference sites.

Special Application Fields

Their rugged design meets industrial requirements as well as Zone 1, 2, 21, 22 standards for oil & gas, petrochemical, mining, marine, refineries, and power plants....

Additional certified models are available upon request.

Clear, Safe Alerts in Harsh Conditions





Superior Audio Performance

The JR speaker series delivers clear, long-range audio for dispatch, communication, and fire emergency broadcasts.
Sound pressure levels reach 105–115 dB.

IP66 protection

Made with anti-static ABS housing and cold-rolled steel bracket, offering high mechanical strength and excellent impact resistance.

Globally Certified Explosion-Proof Safety

Complies with **ATEX, IECEx** standards, ideal for flammable and explosive zones.

This mark indicates compliance with the:

II 2GD

Ex db IIC T6/T5 Gb

Ex tb IIIC T80°C/T95°C Db

Device Compatibility

Maximum SPL: 120 dB

SUS304 stainless steel / aluminum alloy housing with stainless bracket.

Compatible with amplifiers, audio devices, and IP systems for seamless integration.

Thank You

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