



Solutions for underground mines and tunnels

Battery-Powered Wireless Network Infrastructure Node

Model Number: MTX-BWNIN-200

Network infrastructure for tracking, texting and telemetry
Provides both mesh routing and tag reading functionalities

MINETRAX NETWORKING

RF front end

- 902-928 MHz
- NMO antenna connector
- +3dBi omnidirectional antenna
- TX radiated power: -1 dBm up to +14 dBm
- RX sensitivity: -105 dBm
- 64 x 200 kHz channels
- Typical omnidirectional range in underground mines:
up to 175 m depending on antenna placement, tunnel dimensions and curvature, obstructions and rock type

Mesh networking protocol

- 16-bit network address
- Ad hoc self-organizing and self-healing
- Routing capability: any-to-any unicast, broadcast, and to/from Central Server via nearest Gateway
- [Min/Average] latency per hop: 150 ms / 500 ms

Spread spectrum protocol

- TDMA / FHSS
- Synchronization for communications: ad hoc, per link and distributed
- Hopping speed: once per time slot
- Hopping pattern: pseudorandom
- Link level acknowledgements
- 76.8kbps data rate with effective link throughput up to 2.6 kbps (half duplex)

RS-232 data port

- 3-pin RS-232 serial port for connection to RS-232 VHF/UHF data modem or Ethernet Gateway

RFID

- Unique 32-bit identification number
- User configurable label set via Central Server web console

POWER SUPPLY

- Battery-powered with replaceable battery pack
- Battery life: typical = 3 years (depends on level of network activity), minimum = 1 year (standard warranty), maximum = 10 years (leaf nodes)
- Low-battery alarms sent to Central Server provide at least 1 week of advance notice

PHYSICAL CHARACTERISTICS

- Operating temperature: -40°C to +85°C
- Weatherproofing: IP65
- Dimensions: 120 mm x 120 mm x 90 mm + Antenna

INSTALLATION, INTEGRATION & MAINTENANCE

Installation procedure overview

- Set power to ON
- Install within range of other nodes such that LED is green
- Tie wrap mounting on pipes, bolts, screen, etc.

Maintenance procedure overview

- To fix network, add / replace nodes until all LEDs are green
- Add nodes to increase tracking granularity
- Add nodes to extend communication and tracking coverage

Internetworking with existing infrastructure

- Leaky feeder: via RS-232 VHF/UHF data modem connection to Ethernet Gateway installed at head end
- Fiber/Ethernet: via direct RS-232 connection to Ethernet Gateway

Network management

- On-site installation and troubleshooting feedback via 2 status LEDs
- Remote configuration, performance monitoring and troubleshooting via telnet command line and Central Server web-based console