

The Wireless MDT-RTU

The Wireless MDT-RTU is part of the MineTrax Wireless Network from Newtrax Technologies. It is capable of acquiring data from up to 3 SMART instruments and runs on batteries for 3 years. The MineTrax system deploys in a matter of hours instead of days or weeks like typical wired systems.

Highlights:

- Can connect up to 3 SMART instruments to one wireless unit
- Data acquisition is completely wireless and battery-powered
- Also acts as a standard infrastructure/repeater node for the MineTrax network
- Provides both mobile access and backhaul routing 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: 50 m to 150 m depending on antenna placement, tunnel dimensions and curvature, obstructions and rock type
- Typical omnidirectional range on surface: 50 m to 600 m depending on antenna placement and obstructions

The Wireless MDT-RTU

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.

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 internetworking port:

- 3-pin RS-232 serial port for connection to Gateway (optional)

The Wireless MDT-RTU Specifications

RF front end: 902-928 MHz

RX sensitivity: -105 dBm

Typical omnidirectional range in underground mines: 50 m to 150 m

Typical omnidirectional range on surface: 50 m to 600 m

Connectivity: 3 SMART instrument ports



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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 alarm sent to Central Server provides 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 + Connector