



FULL-SCALE DIGITAL COMMUNICATIONS

A photograph of an underground mine tunnel. The walls are rough and rocky. A yellow truck with its headlights on is driving away from the camera. A large red triangle is overlaid on the right side of the image, containing white text.

RCT CONNECT
NETWORK
INFRASTRUCTURE

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RCT CONNECT OVERVIEW

With the underground mine landscape constantly evolving, the industry is turning to digitisation in order to optimise efficiencies to increase productivity and profitability.

RCT's own network infrastructure, RCT Connect, has been designed specifically for machine automation and control in underground mining operations.

The full-scale digital communications solution meets the requirements of the autonomous machines to provide accurate feedback and information in real-time via a secure communication network from the machine's work area to the ControlMaster® Automation Centre.

Operating at 2.4GHz, RCT Connect permits optimum autonomous machine performance for both existing and future machine fleets.

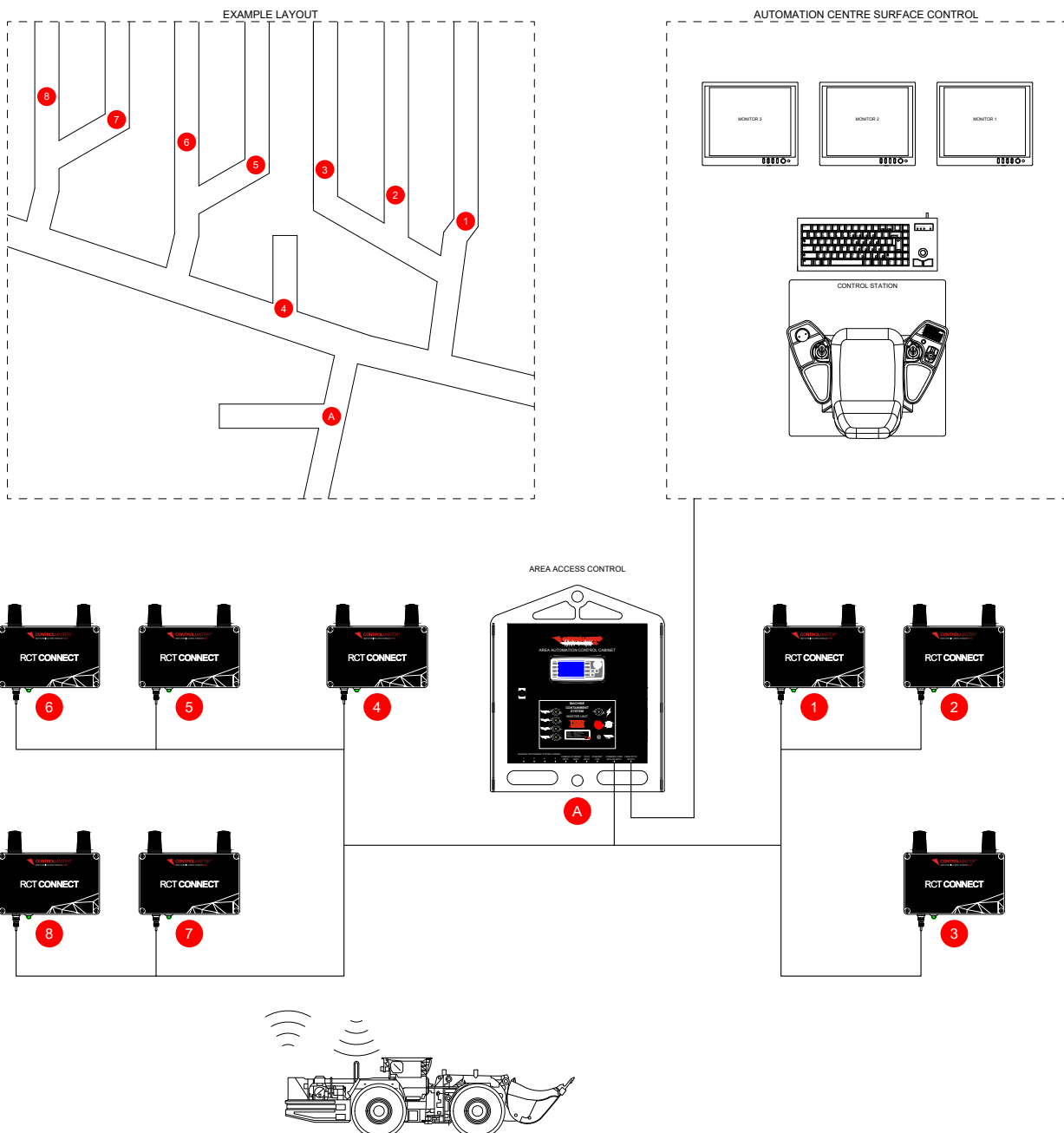
Features

- Capacity to transfer large amounts of data between the machine and Automation Centre
- Full autonomous features able to be delivered
- Expansion and upgrade capabilities
- Remote diagnostics
- Live machine tracking
- Live health and production data from the machine
- Ability to operate from anywhere in the mine

RCT Connect can be supplied as a standalone package

Example Layout

Below layout will be site dependent



RCT CONNECT SYSTEM

ACCESS POINT UNIT

Access points are connected to each other over the coaxial cables using Wilkinson Power Dividers for power and communications backhaul. The system is automatically discovered and configured when it is added into a RCT Connect network, which makes for quick and easy deployment in the mines' work area.

It fulfils the most severe requirements in terms of operating environment; from -20°C (-4°F) to +60°C (140°F), shock and vibration proof, protection against dust and water projections (IP66).

The unit has an integrated 2.4GHz high power wireless PCB that operates using dual chain technology. The PCB also has a Gigabit port, which helps to utilise the full potential of 802.11n wireless speeds and has built in 16kV ESD protection on both the Ethernet and the MMCX ports.

Features

- An RCT Connect network with up to ten access point units, over 1000m (3280ft) in length of coaxial cable can be achieved before additional power injection is required
- Capable of 60Mbps
- DC power supply input (+12 Vdc to +30 Vdc)
- 'Power On' indicator

ACCESS POINT PHANTOM ANTENNA

The Phantom Antenna's patented technology is beneficial when high performance is desired and extreme ruggedness and low profile is required.

The antenna's revolutionary design features field diversity with both vertical and horizontal polarisation components. This gives the antenna diversity, frequency agility, low visibility, wide bandwidth and a low angle radiation pattern that is superior to traditional gain antennas in most applications.

ETHERNET OVER COAXIAL TRANSCEIVER

Designed to extend IP transmission and inject power over coaxial cables to a passive PoE IP device. The transmission distance is up to 1000m (3280ft) line-of-sight.

Features

- Plug and play; no PC required, thus reducing the cables and power distribution cost
- Status LEDs indicate power and link connectivity/activity on RJ45 port
- 128-bit AES encrypted and ultra-low latency transmission
- Built-in 6kV surge protection at BNC and 4kV at RJ45 ports
- Multi EoC transceiver/IP devices to one transceiver at Host side transmission

COAXIAL CABLE

To help avoid communications interference, RCT has identified that most communication failures are due to ill fitted connections on the coaxial cables. As a solution, RCT have pre-cut cables with connectors terminated for ideal connection.

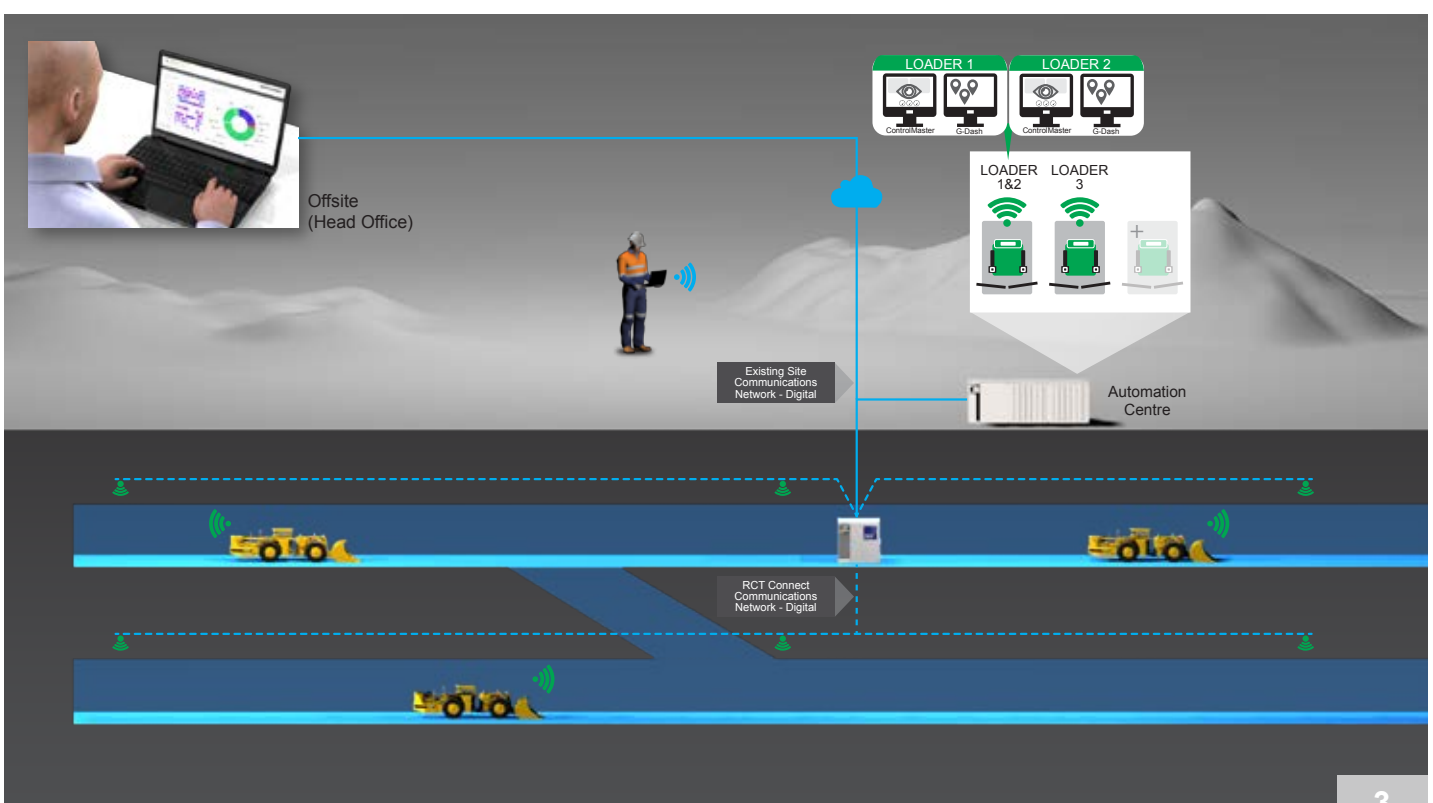
The coaxial cable has the ability to power all access points for up to 1500m (4921ft) negating the need to run external power through the drive.

WILKINSON POWER DIVIDER

A balanced 3dB power divider with an over-moulded style finish and N-type connections.

Features

- Easy installation
- 20dB isolation between ports
- 0.3dB internal loss
- Fully moulded joints for water and dust ingress protection





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