

RCT CONNECT NETWORK INFRASTRUCTURE

Full-scale Digital Communications.

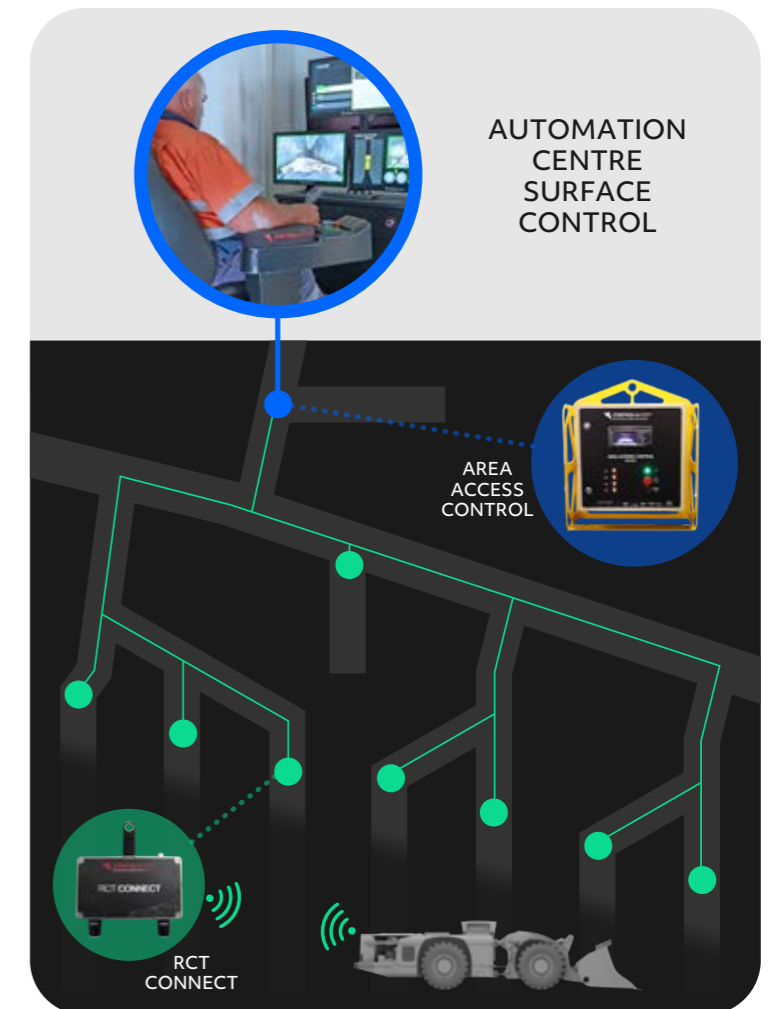


Driving towards **digitisation** of the mining industry.

With the underground mine landscape constantly evolving, the industry is turning to digitisation 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 autonomous machines to provide accurate feedback and information in real time. This is done via a secure communication network from the machine's work area to the ControlMaster® Automation Centre. RCT Connect can also be supplied as a standalone package. Operating at 2.4GHz, RCT Connect enables optimum autonomous machine performance for both existing and future machine fleets.

- ✓ Capacity to transfer large amounts of data between the machine and the Automation Centre
- ✓ Delivery of full autonomous features
- ✓ Expansion and upgrade capabilities
- ✓ Remote diagnostics
- ✓ Live machine tracking.
- ✓ Live health and production data from the machine(s)
- ✓ Ability to operate from anywhere in the mine



EXAMPLE LAYOUT

RCT's Connect system has all the **features** needed.

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 an RCT Connect network, which makes for quick and easy deployment in the mines' work area.

It withstands the most severe of operating environments; from -20°C (-4°F) to +60°C (140°F), shock and vibration proof, and 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 the length of coaxial cable can be achieved before additional power injection is required
- Capable of 60Mbps
- DC power supply input (+12Vdc to +30Vdc)
- The '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 are 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

- An RCT Connect network with up to ten access point units, over 1000m (3280ft) in the length of coaxial cable can be achieved before additional power injection is required
- Plug and play; no PC required, thus reducing the cables and power distribution cost
- Status LEDs indicate power and link connectivity/activity on the 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

RCT has developed pre-cut cables with connectors terminated to avoid ill-fitted connections which often results in most communications failures. These cables guarantee ideal connection to help avoid communications interference.

The coaxial cable can 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

New additions that assist in **increased** productivity.

Camera Interface

The Camera Interface provides an 802.3at PoE connection by simply connecting it to the RCT Connect work area coaxial cable. This enables the monitoring of crucial areas such as the stockpile, ore pass, stope, intersections, barrier zones or any other points of interest.

Specifically designed to suit the ToughCam and Self-Cleaning Camera range for easy setup and confidence in reliability and durability, while still being compatible with 3rd party devices.

With the addition of a local power source, its specification increases beyond the 802.3bt type 2 standard with 120W. This enables powerful PTZ cameras with lights and heating elements to be used, allowing the operator to control the view direction and zoom, or even enabling AI tracking.

Features

- 802.3at connection without power source
- 802.3bt type 2 connection with 24V supply
- Ability to have a camera stream from anywhere around the work area
- Easy Installation. No setup required
- Includes QoS at a lower level to the control system

Connect Extender

Allow the RCT Connect network to be expanded further than its current capabilities.

RCT Connect is easily upgradable as autonomous areas continue to grow in size. For work area networks requiring longer than 1km of communication, more than 10 Access Points are required in the area or multiple Camera Interfaces are required. The RCT Connect Expander allows the work area network to reach new limits when connected to a local power supply.

Features

- Enables RCT Connect to operate further than 1,000M away on coaxial cable
- Allows more than 10 RCT Connect Access Points within the work area network
- Allows multiple Camera Interfaces to be installed on the same work area network



Comprehensive Services

All solutions are backed by RCT's leading support model and ever-expanding service network; aimed at providing local support, using local people.

Site Audit & Consultation

RCT can perform site audits to ensure the safest and most productive approach is taken. RCT provides consultancy services, including feasibility studies and strategies to improve technology and optimise operations.

Customised Solutions

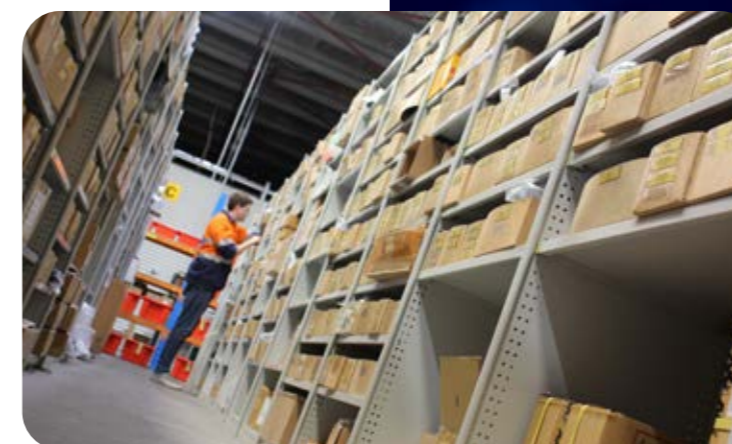
RCT Custom is a department specialising in the delivery of bespoke solutions to address vital operational improvements. The team has the expertise and resources to resolve challenges, regardless of the size or scope of the project.

Skills Training

Industry-recognised courses are tailored to suit operators and maintenance personnel, allowing sites to be more self-sufficient. Supported by practical demonstrations and hands-on experience, relevant content is delivered based on the vast knowledge of our trainers and technicians.

Parts

Keep your operation running without disruptions. RCT has you covered with its stock of 2,500+ specialised parts that can be shipped anywhere in the world.





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