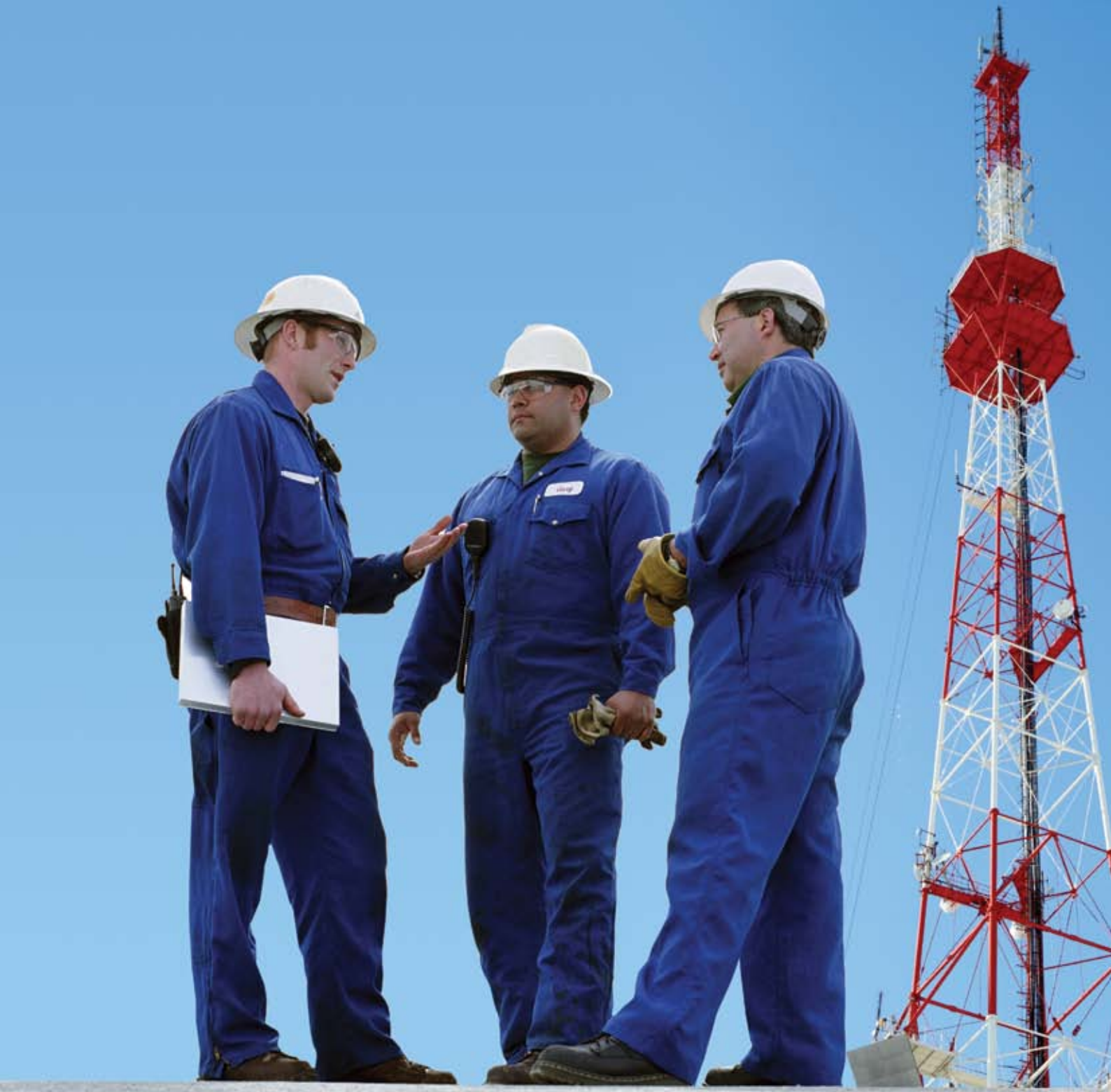


# Bringing versatility and reliability to your wireless network

## Trio Data Radios

Wireless communication for telemetry and remote SCADA solutions





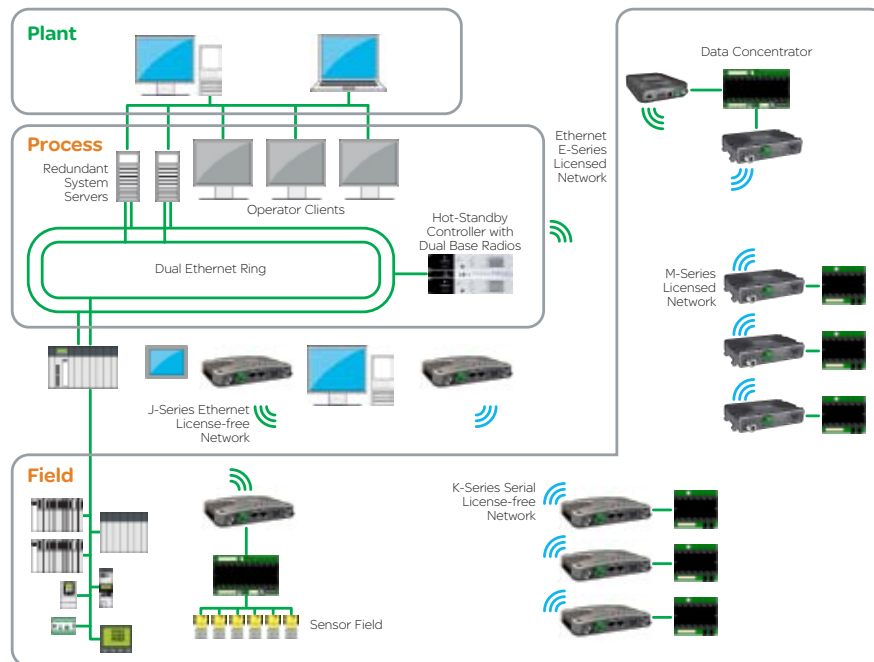
The right solution to  
ensure data integrity over  
wireless infrastructure



## Wireless communication for industrial and utility assets.

Providing secure and reliable wireless communication is a critical challenge for municipal water suppliers, oil & gas producers, electrical utilities and other industries. Monitoring and control infrastructure can be situated in geographically-dispersed locations, comprised of a diverse mix of equipment and system architectures, and subject to stringent environmental and safety regulations. With shrinking budgets and expanding systems, it's becoming increasingly critical to minimise deployment and operational costs, while maximising system performance and data availability.

Trio licensed and license-free data radios offer cost-effective and versatile wireless solutions for Telemetry and Remote SCADA applications.



### Optimised design implementation

Commissioning costs associated with dedicated communication cables and leased lines are minimised by eliminating the need for costly trenching work and wiring infrastructure. Further savings are realized with the minimising of ongoing operational costs.

### Rapid deployment

Permanent or temporary systems are brought on line in a fraction of the time of traditional, hardwired networks with easy-to-install and configure hardware components and effective software network management and diagnostic tools.

### Reliability and high availability

Wireless means no more lost data due to damaged or degraded cabling. Operational lifetime is extended and data integrity is assured over longer distances.

## Providing value to a wide range of applications and customers

Trio data radios reduce installation and maintenance costs associated with the monitoring and control of your remote telemetry system while ensuring data integrity over short and long-haul distances.

By combining the technical and economic advantages of wireless communication with a unique feature set, Trio enables you to take ownership of your network by providing simple and rapid system configuration, consistent & dependable network performance, and long term reliability & availability.



Trio's flexibility and special feature set enables greater choice in network design and functionality by accommodating a greater range of solutions.



### Network-wide management tools

A powerful Network Management System is available for remote configuration and monitoring of the entire radio system from any network node and is an essential tool in troubleshooting and preventative maintenance tasks.



### Use with confidence

Trio radios may be used in legacy installations and are field-proven compatible with virtually all industry-leading equipment brands.



### Optimised Communication

Dedicated remotes, multi-tasking repeater and network bridging units, up to high endurance base radio and hot standby controller models enable greater creativity in network design and functionality by accommodating a greater range of solutions.



### Ease-of Deployment

Trio radios are simple to install and can be pre-configured at the shop for rapid field installation or manually set-up on site with a laptop computer.

### Quality product

High reliability is assured with an MTBF specification of >2 million hours and ISO9001:2008 certification.

### Expertise before and after purchase

We will help answer your system design and configuration questions and provide technical assistance once you're up and running.

## Maximise your ROI by optimising network performance

Unique operational features set Trio radios apart from the competition by expanding network design possibilities to maximise performance and minimise costs. Ethernet & serial interfaces, multi-antenna support, repeater and bridge modes extend networks far beyond the operational range of an individual radio and can bridge disparate data networks together. Network traffic is optimised with support for multiple, simultaneous protocols on one network, configurable Stream Identifier Codes and simultaneous data stream delivery.

TView+ is a network-management and network-wide diagnostics application that provides support for multiple diagnostic hosts, integrated graphical spectrum analysis and remote radio configuration. TView+ is ODBC-compliant and provides for the trending/logging of communication statistics and alarms.

Some of the unique features include:

- KwikStream™ high speed single-radio repeater mode.
- LinkXtend™ dual antenna, network bridging technology extends usable range.
- ChannelShare™ integrated collision avoidance for unsolicited remote transmissions, allowing simultaneous polling, spontaneous alarm reporting, and multiple applications sharing one radio channel to make the most efficient use of available spectrum.
- SmartPath™ technology for enhanced redundancy in network configuration.
- Multistream™ simultaneous data stream delivery allow for multiple vendor devices and protocols to be transported on one radio network.



I want a radio that's right for my network and my business."



## Water and Waste Water

### Telemetry and Remote SCADA

- Potable water
- Production
- Transmission
- Storage
- Treatment
- Consumption

### Locations

- Reservoirs
- Wells
- Valves
- Pumping stations
- Pipelines
- Substations
- Kiosks

### Applications

- Cathodic protection
- Leakage detection
- Equipment breakdown detection
- Water quality
- Customer premises metering
- Custody transfer
- Monitoring flow / level / pressure / and temperature, etc



## Oil & Gas

### Telemetry and Remote SCADA

- Extraction
- Production
- Processing
- Transmission
- Distribution
- Consumption

### Locations

- Upstream and downstream
- Offshore and onshore
- Well heads
- In plants
- Along pipelines
- At valves
- Pumping stations
- Storage tanks

### Applications

- Cathodic protection
- Metering
- Custody transfer
- Emergency shut-down (ESD)
- Water or gas injection
- Monitoring flow / level / pressure / and temperature, etc



Trio radios may be confidently used in legacy and new installations and are field-proven compatible with virtually all industry-leading equipment brands.



## Electricity

### Telemetry and Remote SCADA

- Generation
- Transmission
- Distribution
- Consumption

### Locations

- Power plants
- Substations
- Kiosks
- Power lines
- Pole tops

### Applications

- Substation switching
- Interconnection
- Protection / isolation
- Re-closers
- Relays
- Load shedding
- Fault indication
- Transformer monitoring
- Customer premises metering
- Custody transfer



## Other Market Segments

### Mining & Minerals Exploration

- Remote Sensing
- Land and Offshore

### Petro-chemical

- Production & Transportation

### Security / Alarm Systems

- Emergency Fire & Intrusion Monitoring

### Public Information Message Displays

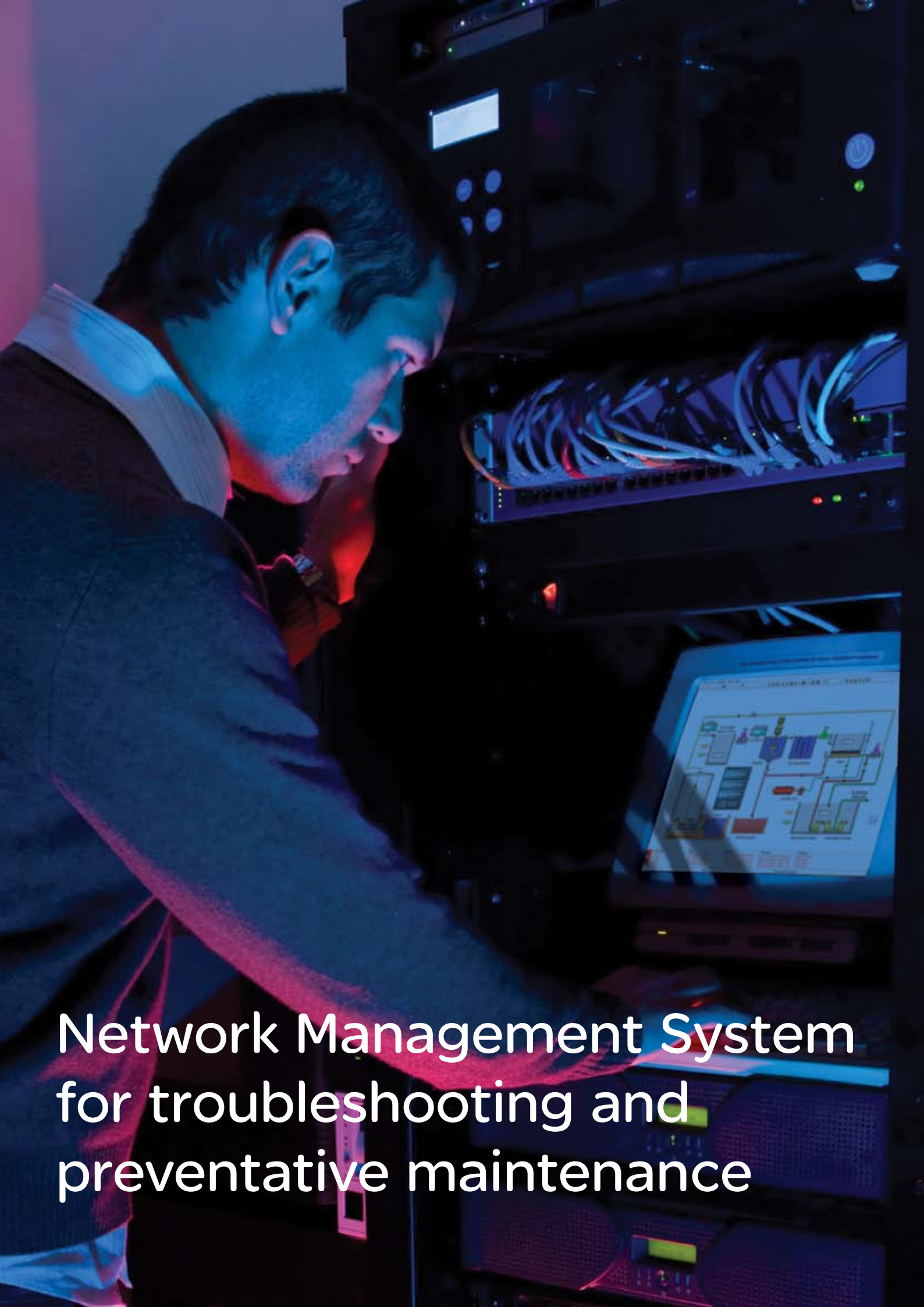
- Public Transport
- Traffic Management
- Parking

### Agriculture & Environment

- Weather, Pollution, and Soil Monitoring



We will help answer your system design and configuration questions and assist with regulatory requirements.



Network Management System  
for troubleshooting and  
preventative maintenance

# Which Trio model is right for my application?



Trio radios are available in a range of hardware components that are optimised for your specific communication needs.

Trio radios are broadly split into licensed and unlicensed frequency models with each further divided into Ethernet & Serial and Serial only interfaced models.

The following chart may be used to determine the appropriate Trio radio to fit your needs. Further technical information is found in the specifications section.

Trio Radio Selection Chart

	License-free						Licensed						
<b>Interface</b>													
Ethernet + Serial	✓	✓						✓		✓		✓	
Serial Only			✓	✓	✓	✓	✓		✓		✓		✓
<b>Frequency Band</b>													
450MHz							✓	✓	✓	✓	✓	✓	✓
900MHz	✓		✓		✓	✓							
2.4GHz		✓		✓									
<b>Radio Type</b>													
Remote	✓	✓	✓	✓	✓	✓	✓	✓					✓
Base									✓	✓			
Hot Standby											✓	✓	
<b>Package</b>													
Board Only						✓							
Standalone	✓	✓	✓	✓	✓		✓	✓					✓
Rack									✓	✓	✓	✓	
<b>Encryption *</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Unique Features</b>													
KwikStream™ High Speed Repeater mode	✓	✓	✓	✓	✓	✓							
LinkXtend™ Dual Antenna Network Bridging	✓	✓	✓	✓	✓	✓							
ChannelShare™ Collision Avoidance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SmartPath™ Enhanced Redundancy	✓	✓	✓	✓	✓	✓							
Multistream™ Simultaneous Data Stream			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Approvals</b>													
FCC/IC/ACA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hazardous Area	✓	✓	✓	✓	✓	✓	✓	✓					✓
ETSI		✓		✓			✓	✓	✓	✓	✓	✓	✓

\* Export restrictions may apply.

## License-free feature overview



### License-Free J & K-Series data radios

#### Common Features

- Configurable operational profiles: access point, remote, bridge, repeater
- KwikStream™ high-speed single radio repeater mode
- Dual antenna LinkXtend™ technology increases usable range
- Repeater and Bridge units support locally connected user devices
- ChannelShare™ collision avoidance for unsolicited remote transmissions allowing simultaneous polling and spontaneous reporting
- SmartPath™ Technology for enhanced redundancy in network configuration
- License-free operation in the 900MHz and 2.4GHz ISM frequency bands
- Robust, frequency-hopping, spread-spectrum technology for superior interference immunity
- 1 Watt (+30dBm) maximum allowable transmitter power (500mW with 2.4GHz version)
- High VSWR protection (900MHz version only)
- Compatible with Trio TView+ Diagnostics for stand-alone network management
- Spectrum Analyser and Channel Lockout facilities
- 256-bit AES data encryption (export restrictions may apply)
- Reliable operation in environmental extremes: -40°C to +70°C (-40°F to +158°F)

### J-Series Ethernet & serial data radio

#### JR900 | JR240

- 900MHz version: 512kbps high speed over-air data rate or 256kbps for longer range. 2.4GHz version: 256kbps
- Dual Independent Ethernet ports (Auto MDI/MIDX)
- MAC address based filtering to reduce traffic on air (Smart peer-to-peer repeating – manual configuration of peer to peer not required)
- Legacy RS-232 serial support via embedded terminal servers (UDP/TCP)
- SNMP Access to Radio Diagnostics
- Telnet and Serial console based Management Interface
- Compact, rugged alloy housing
- 10-30VDC power supply
- Dual industry-standard TNC antenna connectors

### K-Series serial data radio

#### KR900 | KR240

#### Common Features:

- 256kbps high speed over-air data rate (can be reduced to 128k, 64k or 32k for longer range)
- Advanced error free data delivery with CRC plus selectable FEC and ARQ
- Suitable for most industry standard data protocols. e.g. Modbus, DNP3, IEC870-5-101, etc.
- MultiStream™ simultaneous data stream delivery allows for multiple vendor devices/protocols to be transported on the one radio network - compatible with Trio E-Series and M-Series
- Flexible data stream routing providing optimum radio channel efficiency

#### KB900 | KB240 (Board only)

#### KP900 | KP240 (Enclosure)

- Dual, independent, user-configurable data ports
- Selectable 300-230 kbps asynchronous RS-232 and RS-485 interfaces
- Mounting options for DIN-Rail and Solar

## Licensed feature overview



### E-Series Ethernet/Serial and M-Series Serial Data Radios

#### Common Features –

##### Serial MR450 | ER450 | EB450 | EH450

- Compatible with most industry-standard data protocols, e.g. Modbus, DNP3, IEC870, SEL mirrored bits, etc.
- Multistream™ simultaneous data streams allow for multiple vendor devices/protocols to be transported on the one radio network
- Internal repeater operation – single radio store and forward
- Channelshare™ unique integrated C/DSMA collision avoidance technology permits simultaneous polling and spontaneous alarm reporting operation in the same system
- Remote, fully transparent Network Management and Diagnostics
- Dual, independently configurable data ports and separate system port

#### Common Features –

##### Ethernet & Serial ER45e | EB45e | EH45e

- Independent Ethernet & serial ports
- Ethernet Port 10/100Mbps (auto MDIX sensing) IEEE 802.3
- Selectable 300 – 38.4 kbps asynchronous RS-232 interface
- Legacy RS-232 serial support via embedded terminal server (UDP/TCP)
- Separate on-line system port avoids the need to interrupt user data for configuration access
- Maximum narrowband channel utilization with smart peer-to-peer repeating, broadcast filtering and data compression
- Advanced commissioning tools and remote diagnostics including SNMP
- RS-232 serial support via embedded terminal server (UDP/TCP)

### E-Series

#### Common Features –

##### ER450 | ER45e | EB450 | EB45e | EH450 | EH45e

- 380 – 518MHz (various sub-frequency bands available)
- Selectable 300 – 57.6 kbps asynchronous RS-232 interface
- True 19,200 bps over-air data rates in 12.5kHz FCC channels (also 9600 bps)
- 128-bit AES encryption (export restrictions may apply)
- 12.5 or 25kHz channel operation

- Fast data turnaround
- Compatible with legacy systems (Non Packet Digital and Bell 202 Modes)
- Full specification operation from -30°C to + 60°C (-22°F to + 140°F)
- VSWR protection

#### Remote ER450 | ER45e

- 5 Watt transmitter output
- Simplex, Half Duplex and Full Duplex (Full Duplex with ERFD450 option)
- Rugged die-cast alloy chassis
- DIN-rail mounting kit option
- Multi-function LED Display

#### Base Radios EB450 | EB45e

- 5 Watt or 20 Watt transmitter output with 100% duty cycle
- 19" 2RU rack mount
- Extensive front panel LED display
- Internal (compact) or external duplexer options
- Digital inputs and outputs

#### Hot Standby Radios EH450 | EH45e

- 5 Watt or 20 Watt transmitter output with 100% duty cycle
- Auto change-over on failure of Tx Power, DC Voltage, Data Errors and Receive Failure
- Remote monitoring, control and changeover of duplicated base/repeater stations
- Hot swappable modular 19" 5RU rack mount
- Extensive front panel LED display
- Internal (compact) and external duplexer options
- Digital inputs and outputs

### M-Series serial

#### MR450

- 395-520 MHz operation
- 0.1 to 5 watt transmitter output power
- Simplex or half duplex operation with any Tx-Rx splits
- One model suitable for 12.5 and 25 kHz channel spacing
- User configurable 300-38,400 bps RS-232 port
- DIN Rail mounting kit option
- Rugged die-cast alloy chassis



Make the most of your energy

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