

Trio KR900 & KR240 Spread Spectrum Data Radio

Features:

- 900MHz and 2.4GHz frequency-hopping spread spectrum technology
- Advanced security with AES 256-bit encryption
- High data throughput with up to 512kbps over-air data rates
- Powerful 1 Watt transmitter (900MHz model)
- Ultra long range high-performance receiver
- Dual antennas with independent power settings
- Multistream™ simultaneous data stream support
- KwikStream™ high-speed repeater mode (Store and Forward)
- LinkXtend™ network bridge functionality
- TView+™ - user friendly configuration and diagnostics interface
- 3-Year Warranty (parts and labor)



Trio KR900 & KR240 data radios set the standard for reliable and secure serial data communication in the license-free 900MHz and 2.4GHz ISM bands.

Combining standard features like a 1W (900MHz), 0.5W (2.4GHz), 100mW (2.4GHz Europe ETSI) radio transmitter, dual antennas, extended operational temperature range and ruggedized metal enclosure, the KR900 & KR240 are serious radios for serious applications. The KR900 & KR240 radios share many of the same powerful features as the J-Series radios including support for simultaneous data streams, high-speed repeater mode and network bridging. The KR900 & KR240 are HazLoc-rated to CSA Class 1 Div 2 (900 MHz only, 0.5W 2.4GHz pending approval) and ATEX II 3G (2.4GHz ETSI version only), has Windows-based diagnostics and network management tools, and is covered by an industry leading 3-year warranty.

As with all Trio radio solutions, the KR900 & KR240 can be rapidly deployed as a permanent or temporary alternative to wired communication networks which are costly to install and difficult to modify. When integrated into legacy systems or used as the communications backbone of a new system, Trio radios instantly bring up-to-date communication technology and performance to your network.

Applications

Trio K-Series radios are used across a wide range of industrial markets in point-to-point and point-to-multipoint applications. They are often used for remote interconnection of PLCs, RTUs, data

loggers, and other data monitoring and control devices and are compatible with the powerful Trio E-Series Base Station and Hot Standby units.

Secure Data is Critical

Safe and secure data traffic is critical to any modern SCADA system and a K-Series hallmark. KR900 & KR240 radios feature a frequency-hopping algorithm, based on its network name, makes data interception extremely difficult and will defeat most common attacks on the radio network. The Trusted Remotes/Masters functionality, if enabled, further increases security by restricting communication to permitted devices only and 256-bit AES encryption (North America and Australia only) makes it virtually impossible for hackers and other intruders to listen in to radio traffic or send potentially harmful process control commands.

Features

Designed for maximum value and functionality Control Microsystems has incorporated a wide range of state-of-the-art features in the K-Series:

Data modem: Advanced technology GFSK digital data modem featuring error-checked high data throughput and true 256Kbps over-the-air data rates. User-configurable data ports offer simultaneous data streams, collision avoidance, 256-bit AES encryption (North America/Australia only) and support for Industry-standard protocols including Modbus, DNP3.0 and IEC 60870-5-101.

Radio: High-frequency stability and accuracy digital synthesizer providing rapid Tx-Rx turnaround times and greater system capacity with optimized data quality. These highly flexible radios are universally applicable with compliance to FCC and ETSI radio communication regulatory requirements.

Configuration & Management

All Trio radios offer maximum versatility by providing local and over-the-air configuration options.

TView+

As the Network Management and Remote Diagnostics environment for all Trio radios this tool helps to eliminate system downtime and reduce maintenance costs. The software incorporates a wide range of efficient network management utilities including error rate testing, channel occupancy statistics and data error statistics. TView+ also includes a diagnostics utility that permits monitoring and logging of radio performance parameters for all units in the network.

Design, Environmental and Power

The Trio KR900 & KR240 are built using compact, lightweight housings, ensuring maximum reliability together with ease-of-installation and serviceability. Full specification operation is guaranteed over the entire -40 to +70°C (-40 to 158°F) temperature range. Overall power consumption is optimized with a user-controlled smart sleep mode.

Specifications

Functional	
Location	Master, remote, repeater or network-bridge
Unlicensed Radio Frequency Range	902-928MHz region-specific and 2.4GHz ISM band versions available
RF Channel Data Rate	32,000/64,000/128,000 or 256,000bps
Features	
Configuration Interface	TView+: configuration, network management and diagnostic windows GUI software
Radio Frequency Accuracy	±2.5ppm
Transmitter	Power: +30dBm, 0.01 - 1W (900MHz) +27dBm, 0.01 - 0.5W (2.4GHz), limited to 20dBm max., 100mW (ETSI version) 0.5db steps, user-configurable Protection: Tx Over-Temperature Modulation: 2 Level GFSK Tx Key-up Time: <50µS
Receiver	Selectivity: Better than 50dB Intermodulation: Better than 65dB
Connections	User Data Port: 1 x DE9 female port wired as DCE (modem) 1 X RJ45 System Port: RJ45 for diagnostic, configuration and re-programming Antenna: 2 x TNC female bulkhead, separate connectors for LinkXtend™ or separate TX/RX antennas Power: 2 pin locking, mating connector supplied LED Display: Multimode Indicators for Pwr, Tx, Rx, Sync, TxD and RxD data LEDs (for both port A and B)
Modem	Data Serial Port A: RS-232 or RS-485, RJ-45, 600-230,000bps asynchronous Data Serial Port B: RS-232, DCE, DE9, 300-38,400bps asynchronous System Port: RS-232, 19,200bps asynchronous Flow Control: Selectable hardware/software/3-wire interface Bit Error Rate: < 1x10 ⁻⁶ @ -108dBm Encryption: 256-bit AES encryption (within North America/Australia only) Collision Avoidance: Channelshare™ collision avoidance system Firmware: Field-upgradeable Flash memory
General	Temperature Range: -40 to +70°C, (-40 to 158°F) Power Supply: 10-30Vdc (13.8Vdc nominal) Transmit Current: 500mA nominal @ 1W (900MHz), 500mA nominal @ 0.5W (2.4GHz), 200mA @ 100mW (2.4GHz ETSI) Receive Current: <120mA nominal Sleep Mode: Software-controlled and external Enclosure: Rugged die-cast, w/ integrated mounting holes Dimensions: 100 x 34 x 165mm (4.0 x 1.4 x 6.5 inches) Weight: 0.5kg (1.1lbs)
Diagnostics	Network-wide operation from any remote terminal Non-intrusive protocol - runs simultaneously with the application Over-the-air re-configuration of all parameters Storage of data error and channel occupancy statistics In-built error rate testing capabilities
Approvals and Certifications	FCC: PART 15 IC: RSS 210 ACA: AS1468-2003 CSA: Class I, Division II, Groups (A, B, C, D) for Hazardous Locations ANSI/UL equivalent (900MHz only, 0.5W 2.4GHz pending approval) ATEX: II 3G Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (2.4GHz ETSI version only) ETSI: EN 301 489 (2.4GHz, 100mW version only)
Warranty	3-Year parts and labor

Model Code

Code T Select: Model Type	
K	K-Series
Code y Select: Unit Type	
R	Remote Station
Code xxx Select: Generic Frequency Band	
900	900MHz
240	2.4GHz
Code aa Select: Frequency	
	900MHz 2.4GHz
00	License-free band 902 to 928 MHz (FCC/IC) License Free Band 2.4GHz (North America/Australia)
01	License-free band 915 to 928 MHz (Australia/Brazil) License Free Band 2.4GHz (ETSI, Europe only)
02	License-free band 921 to 928 MHz (New Zealand)
Note: Other frequency bands available upon request.	
Code bbb Select: RF Channel Data Rate & Bandwidth (Internal Modem)	
001	32kbps to 256kbps

Tyxxx-aabbb-cde represents the part number matrix

Code c Select: Options 1	
D	No Encryption (mandatory outside North America/Australia)
E	Encryption (mandatory within North America/Australia)
Code d Select: Options 2	
H	Hazardous Environment: Class I, Division II, Groups (A, B, C, D) for Hazardous Locations ANSI/UL equivalent (900MHz only, 0.5W 2.4GHz pending approval) ATEX II 3G Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (2.4GHz ETSI version only)
Code e Future Hot Standby Use	
0	No Options

Communications Standards:

- FCC – Federal Communications Commission (USA)
- IC – Industry Canada
- ETSI – European Telecommunication Standards Institute
- ACA – Australian Communications Authority

Example: KR900-00001-EH0 specifies: Trio K-Series KR900 Remote Station, 900MHz band with a specific frequency range of 902 to 928MHz, a 32 to 256kbps modem, Encryption and Class1 Div2 rating.

Accessories (Contact Sales Support Department for up-to-date list)

Description	Part Number
Programming and Communication Cables	
TView+ E & K Series Programming Cable	297816
Trio Communication Cable, DE-9M to DE-9F - Modem, 10 feet (3.05m)	297820
Trio Communication Cable, DE-9M to RJ45M - Modem, 10 feet (3.05m)	297821
Trio Communication Cable, RJ45M to RJ45M - Modem, 10 feet (3.05m)	297822
Trio Communication Cable, RJ45M to DE-9F - Modem, 10 feet (3.05m)	297824
Other	
TView+ Configuration/Diagnostics software package	297826

Physical Dimensions - Remote Data Radio - KR900 | KR240

