

# Trio K-Series

License-free serial data radio

KR900 | KR240 | KP900 | KP240 | KB900 | KB240



## Product at a glance

Trio K-Series frequency-hopping, spread-spectrum data radios set the standard for reliable and secure serial data communication in the license-free 900 MHz and 2.4G Hz ISM bands. With unique features like LinkXtend™ for single radio store-and-forward, and ChannelShare™ collision-avoidance for support of spontaneous SCADA messages, K-Series radios provide the flexibility to allow implementation of even the most complex wireless solutions with virtually unlimited expansion capability.

The industrial strength K-Series is ideally suited for the most demanding Point-to-Multipoint, Point-to-Point, and SmartPath™ mesh-like wireless Telemetry and remote SCADA applications, and is available in a fully enclosed housing (KR) as well as small-format DIN rail-mountable (KP), board-only (KB), and OEM module (OM) variants.

# Trio K-Series

## License-free serial data radio

### Specifications – Trio KR900 | KR240

#### Radio

Frequency Range	902...928 MHz or 2.4...2.48335 GHz, (region-specific versions available)
Frequency Accuracy	±2.5 ppm (900 MHz) ±3.0 ppm (2.4 GHz)
Radio Modes	Half Duplex, pseudo Full Duplex
Configuration	Configuration via embedded HTTP, HTTPS web interface & or Telnet/SSH/Serial console
Selectivity	Better than 50 dB
Spurious Response	Better than 70 dB
Tx Power	<ul style="list-style-type: none"> <li>• 900 MHz : 0.01...1 W (+30 dBm) 0.5 dB steps configurable with over-temperature and high VSWR protection</li> <li>• 2.4 GHz : 0.01...500 mW (+27 dBm) 0.5 dB steps configurable with over-temperature protection</li> </ul>
Modulation	T2 Level GFSK

#### Connections

Serial Data Port A	1 x RS232/RS485 RJ-45. 600...230,000 bps asynchronous
Serial Data Port B	1 x RS232 DB9 female DCE. 300...38,400 bps asynchronous
Serial Data Port Flow Control	Configurable hardware / 3-wire interface
Serial Data Port DCD Control	Configurable DCD operation : activated on Master synchronisation or from user data output
System Port	1 x RS232 RJ45: 19,200 bps, for configuration and diagnostics
Antenna	2 x TNC female bulkhead 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

RF Channel Data Rate	32,000 bps, 64,000 bps, 128,000 bps or 256,000 bps
Bit Error Rate	Max sensitivity < $1 \times 10^{-6}$ @ -108 dBm
Operating Modes	Master, remote, repeater or network-bridge
Network Types	Point-to-Point, Point-to-Multipoint, Point-to-Multipoint with Repeaters / Store and Forward, Mesh
Channelshare™	Trio's unique supervisory collision avoidance system
MultiStream™	Simultaneous data stream delivery allows for multiple vendor devices/protocols to be transported on the one radio network
SmartPath™	Technology for enhanced redundancy in network configuration (Mesh)
Firmware	Local and over-the-air flash-based firmware

Specifications continue on the next page

# Trio K-Series

License-free serial data radio

## Specifications – Trio KR900 | KR240 – cont'd

### Security

Encryption*	256-bit AES
Password Protection	Password-protected configuration sessions
Trusted Unit	Optional Trusted Access Point-Trusted Remote operation

\* Export restrictions may apply. Contact factory for details.

### Diagnostics

Diagnostics Overview	<ul style="list-style-type: none"> <li>• TVIEW+™ configuration, network management and diagnostic Windows GUI software</li> <li>• Spectrum Analyser and Channel Lockout facilities</li> <li>• Network-wide operation from any remote terminal</li> <li>• Non intrusive protocol – runs simultaneously with the application</li> <li>• Over-the-air re-configuration of user parameters.</li> <li>• Storage of data error and channel occupancy statistics</li> <li>• In-built Error Rate testing capabilities</li> <li>• Diagnostics parameters available:             <ul style="list-style-type: none"> <li>• Transmitter Power</li> <li>• Received Signal Strength</li> <li>• DC Supply Voltage</li> <li>• Received Frequency Error</li> <li>• Radio Temperature</li> </ul> </li> </ul>
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### General

Operating Temperature Range	-40...+ 70 °C (-40...+158 °F)
Power Supply	10...30 Vdc (13.8 Vdc nominal)
Transmit Current	<ul style="list-style-type: none"> <li>• 900 MHz: 500 mA nominal @ 1 W</li> <li>• 2.4 GHz: 800 mA nominal @ 0.5 W</li> </ul>
Receive Current	<ul style="list-style-type: none"> <li>• 900 MHz: &lt;120 mA nominal @ 13.8 Vdc</li> <li>• 2.4GHz: &lt;100 mA nominal @ 13.8 Vdc</li> </ul>
Sleep Mode	Software Controlled
Housing & Dimensions	Rugged die-cast, 100 mm X 34 mm X 165 mm (4.0 in. X 1.4 in. X 6.5 in.)
Mounting	Integrated Mounting Holes or DIN Rail mounting (optional)
Weight	0.5 kg (1.1 lbs.)

Specifications continue on the next page

# Trio K-Series

License-free serial data radio

## Specifications – Trio KR900 | KR240 – cont'd

### Approvals and Certifications

Europe (ETSI)	ETSI EN60950, EN50392 EN300328 EN301489 (2.4 GHz only)
FCC	FCC PART 15
Industry Canada	IC RSS210
Australia	ACMA AS/NZS 4268
Hazardous Locations	<ul style="list-style-type: none"> <li>• 900 MHz : CSA Class I, Division II, Groups (A,B,C,D) for Hazardous Locations ANSI/UL equivalent)</li> <li>• 2.4 GHz : ATEX II 3G Ex nA IIC T4</li> </ul>

Note: Not all product features are available in every mode of operation.

Disclaimer: Schneider Electric reserves the right to change product specifications. For more information visit [www.se.com](http://www.se.com).

# Trio K-Series

## License-free serial data radio

### Specifications – Trio KP900 | KP240 | KB900 | KB240

#### Radio

Frequency Range	902...928 MHz or 2.4...2.48335 GHz, (region-specific versions available)
Frequency Accuracy	±2.5 ppm (900 MHz) ±3.0 ppm (2.4 GHz)
Radio Modes	Half Duplex, pseudo Full Duplex
Configuration	All configuration via Windows™-based software
Selectivity	Better than 50 dB
Spurious Response	Better than 70 dB
Tx Power	<ul style="list-style-type: none"> <li>• 900 MHz : 0.01...1 W (+30 dBm) 0.5 dB steps configurable with over-temperature and high VSWR protection</li> <li>• 2.4 GHz : 0.01...500 mW (+27 dBm) 0.5 dB steps configurable with over-temperature protection</li> </ul>
Modulation	2 Level GFSK

#### Connections

Serial Data Port A	1 x RS232/RS485 RJ-45. 600...230,000 bps asynchronous
Serial Data Port B	1 x RS232 RJ-45. 300...38,400 bps asynchronous (shared with System Port)
Serial Data Port Flow Control	Configurable hardware (Serial Data Port A only) / 3-wire interface
Serial Data Port DCD Control	Configurable DCD operation : activated on Master synchronisation or from user data output
System Port	1 x RS232 RJ45: 19,200bps, for configuration and diagnostics (shared with Serial Data Port B)
Antenna	2 x SMA female bulkhead 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

RF Channel Data Rate	32,000 bps, 64,000 bps, 128,000 bps or 256,000 bps
Bit Error Rate	Max sensitivity < $1 \times 10^{-6}$ @ -108 dBm
Operating Modes	Master, remote, repeater or network-bridge
Network Types	Point-to-Point, Point-to-Multipoint, Point-to-Multipoint with Repeaters / Store and Forward, Mesh
Channelshare™	Trio's unique supervisory collision avoidance system
MultiStream™	Simultaneous data stream delivery allows for multiple vendor devices/protocols to be transported on the one radio network
SmartPath™	Technology for enhanced redundancy in network configuration (Mesh)
Firmware	Local and over-the-air flash-based firmware

Specifications continue on the next page

# Trio K-Series

License-free serial data radio

## Specifications – Trio KP900 | KP240 | KB900 | KB240

### Security

Encryption*	256-bit AES
Password Protection	Password-protected configuration sessions
Trusted Unit	Optional Trusted Access Point-Trusted Remote operation

\* Export restrictions may apply. Contact factory for details.

### Diagnostics

Diagnostics Overview	<ul style="list-style-type: none"> <li>• TVIEW+ configuration, network management and diagnostic Windows GUI software</li> <li>• Spectrum Analyser and Channel Lockout facilities</li> <li>• Network-wide operation from any remote terminal</li> <li>• Non intrusive protocol – runs simultaneously with the application</li> <li>• Over-the-air re-configuration of user parameters.</li> <li>• Storage of data error and channel occupancy statistics</li> <li>• In-built Error Rate testing capabilities</li> <li>• Diagnostics parameters available:             <ul style="list-style-type: none"> <li>• Transmitter Power</li> <li>• Received Signal Strength</li> <li>• DC Supply Voltage</li> <li>• Received Frequency Error</li> <li>• Radio Temperature</li> </ul> </li> </ul>
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Receive Current	<ul style="list-style-type: none"> <li>• 900 MHz: &lt;110 mA nominal @ 13.8 Vdc</li> <li>• 2.4 GHz: &lt;100mA nominal @ 13.8 Vdc</li> </ul>
Sleep Mode	Software Controlled
Housing & Dimensions	<ul style="list-style-type: none"> <li>• KPxxx : Corrosion resistant zinc plated steel with black enamel paint 130 mm X 39 mm X 56 mm (5.1 in. X 1.5 in. X 2.2 in.)</li> <li>• KBxxx : Bare board 129 mm X 31 mm X 55 mm (5.08 in. X 1.22 in. X 2.17 in.)</li> </ul>
Mounting	Integrated Mounting Holes or DIN Rail mounting (optional)
Weight	0.5 kg (1.1 lbs.)

Specifications continue on the next page

# Trio K-Series

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Specifications – Trio KP900 | KP240 | KB900 | KB240

## Approvals and Certifications

IC	RSS 139 (RSS 210)
Hazardous Locations – North America	CSAUS, suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations (900MHz only), Temperature Code T4 per CSA Std C22.2 No. 213-M1987 / UL1604
Europe	ATEX: II 3G Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (2.4GHZ 100mW ETSI version only)
Safety	CSA C22.2 No. 142-M1987 and UL916 in Canada and USA
EMC	FCC Part 15, Subpart B, Class A Verification EN61000-6-4: 2007 Electromagnetic Compatibility Generic Emission Standard Part2: Industrial Environment C-Tick compliance Registration number N15744
Immunity	EN61000-6-2: 2005 Electromagnetic Compatibility Generic Standards Immunity for Industrial Environments

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# Trio K-Series

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Model Code KR900 | KR240 | KP900 | KP240 | KB900 | KB240

TBURKyxxx-aabbbcode represents a typical part number

Model	Model Type
TBURK	K-Series

Code	Select: Unit Type
R	Remote station with full enclosure for panel or DIN rail mounting (DIN rail mounting bracket sold separately)
P	Remote station with compact enclosure for panel or DIN rail mounting (DIN rail clips sold separately)
B	Remote station, board-only version for standoff mounting (standoffs not included)

Code	Select: Generic Frequency Band
900	900 MHz
240	2.4 GHz

Code	Select: Frequency
	900 MHz Frequency Band
00	License-free band 902...928 MHz (FCC/IC - Requires Encryption for Canada and USA)
01	License-free band 915...928 MHz (ACMA - Requires Encryption for Australia)
05	License-free band 921...928 MHz (New Zealand)
06	License-free band 902...907.5 MHz and 915...928 MHz (Brazil)
	<b>2.4 GHz Frequency Band</b>
00	License-free band 2.4 GHz, 500 mW (FCC/IC/AUS - Requires Encryption for North America & Australia)
01	License-free band 2.4 GHz, 100 mW (ETSI), ATEX (Europe)

Note: Other frequency bands available upon request.

Code	Select: RF Channel Data Rate & Bandwidth (Internal Modem)
001	32 Kbps to 256 Kbps

Code	Select: Encryption
D	No encryption (standard on all shipments outside of USA, Canada and Australia)
E	Encryption* (standard within USA, Canada and Australia)

Model Code continues on the next page



# Trio K-Series

License-free serial data radio

## Model Code cont'd

TBURKyxxx-aabbbcd represents a typical part number

Code	Select: Approvals
H	CSA Hazardous Environment Class 1, Div 2 (standard on KR900   KP900   KB900)
A	ATEX II 3G, Ex nA IIC T4 compliance (standard on KR240   KP240   KB240)

Code	Future Option
0	None

Example: TBURKR900-00001EH0 specifies Trio KR900 Remote Station, License-free band 902 to 928 MHz (FCC/IC), 32kbps to 256kbps, Encryption and CSA Hazardous Area Approved

Communications Standards:

FCC – Federal Communications Commission (USA)

IC – Industry Canada

ETSI – European Telecommunication Standards Institute

ACMA – Australian Communications Authority

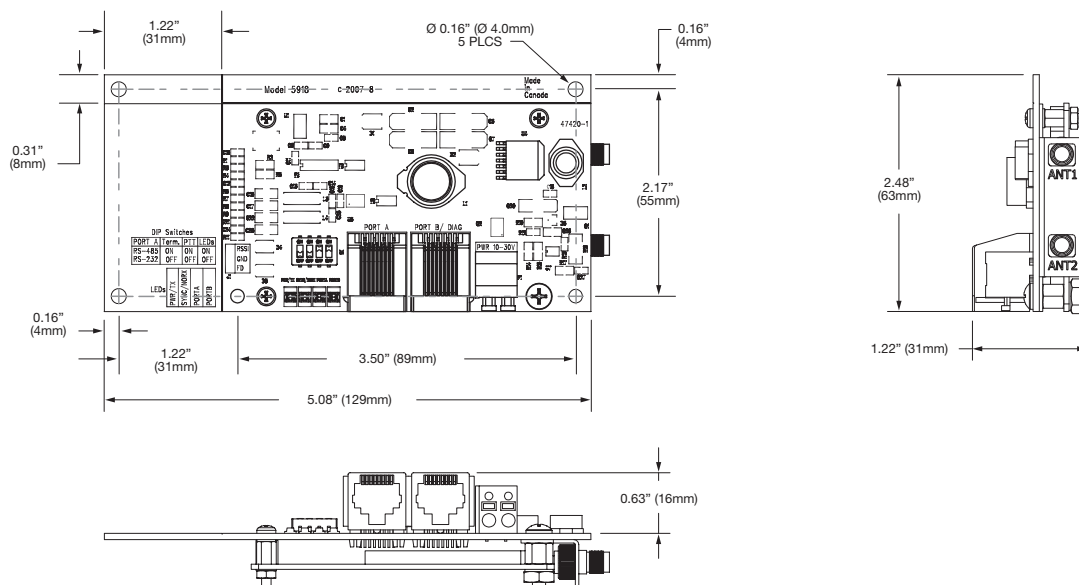
Contact your local sales office for accessories

\* Export restrictions may apply. Contact factory for details.

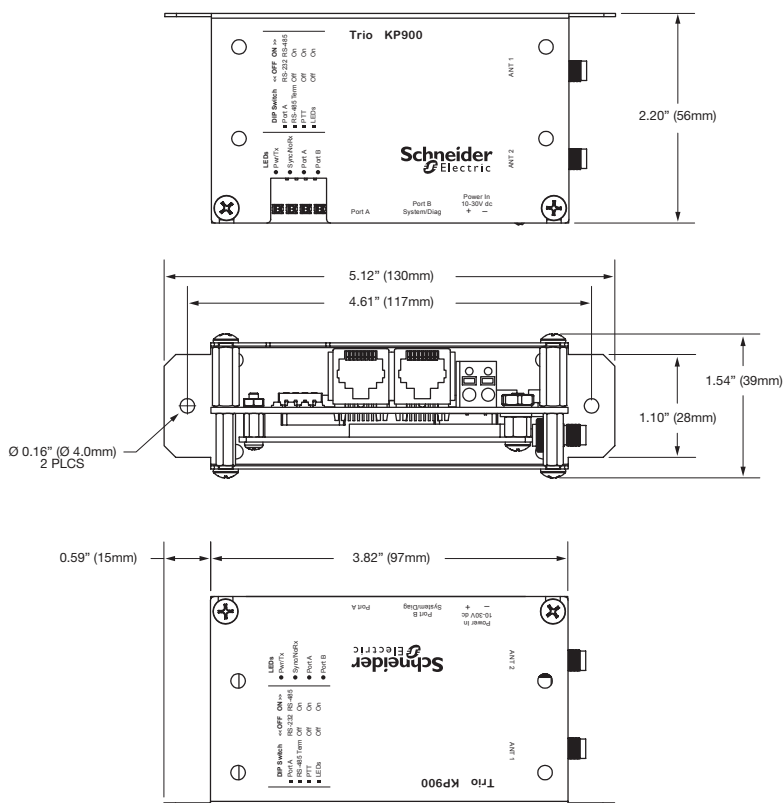
# Trio K-Series

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## KB900 | KB240 (board only)



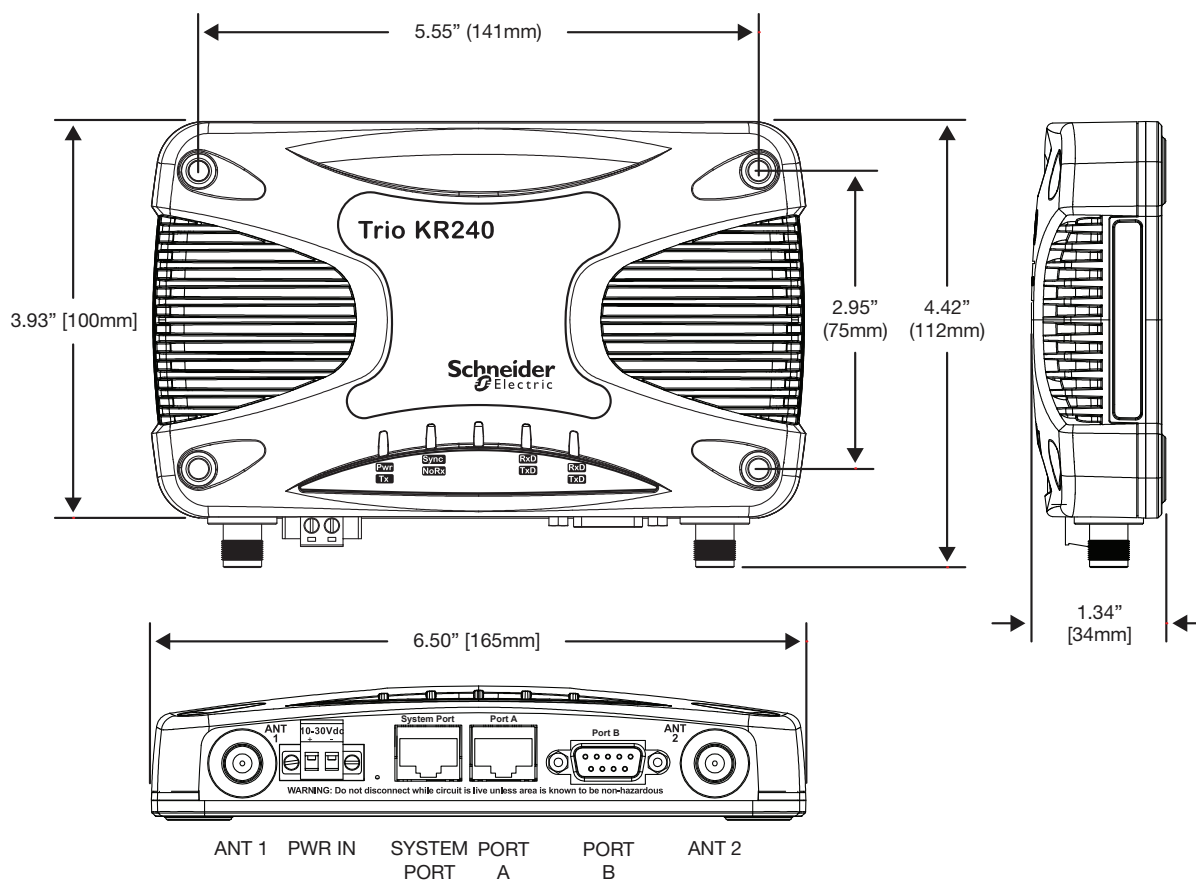
## KP900 | KP240 (compact enclosure)



# Trio K-Series

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KR900 | KR240



**Note:** This product is RoHS-compliant. Accessories sold separately.

**Disclaimer:**

The information provided in this document contains general descriptions and/or technical characteristics of the performance of the described products or services. For detailed specification, performance and instruction of use, refer to corresponding Catalogs and user guides if available.

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