

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"> • 900 MHz : 0.01...1 W (+30 dBm) 0.5 dB steps configurable with over-temperature and high VSWR protection • 2.4 GHz : 0.01...500 mW (+27 dBm) 0.5 dB steps configurable with over-temperature protection
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 < 1×10^{-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"> • TVIEW+™ configuration, network management and diagnostic Windows GUI software • Spectrum Analyser and Channel Lockout facilities • Network-wide operation from any remote terminal • Non intrusive protocol – runs simultaneously with the application • Over-the-air re-configuration of user parameters. • Storage of data error and channel occupancy statistics • In-built Error Rate testing capabilities • Diagnostics parameters available: <ul style="list-style-type: none"> • Transmitter Power • Received Signal Strength • DC Supply Voltage • Received Frequency Error • Radio Temperature
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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"> • 900 MHz: 500 mA nominal @ 1 W • 2.4 GHz: 800 mA nominal @ 0.5 W
Receive Current	<ul style="list-style-type: none"> • 900 MHz: <120 mA nominal @ 13.8 Vdc • 2.4GHz: <100 mA nominal @ 13.8 Vdc
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.)
Warranty	3 years on parts and labor

Specifications continue on the next page

Trio K-Series

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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">• 900 MHz : CSA Class I, Division II, Groups (A,B,C,D) for Hazardous Locations ANSI/UL equivalent)• 2.4 GHz : ATEX II 3G Ex nA IIC T4

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.

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"> • 900 MHz : 0.01...1 W (+30 dBm) 0.5 dB steps configurable with over-temperature and high VSWR protection • 2.4 GHz : 0.01...500 mW (+27 dBm) 0.5 dB steps configurable with over-temperature protection
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 < 1×10^{-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

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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

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Diagnostics

Diagnostics Overview	<ul style="list-style-type: none"> • TVIEW+ configuration, network management and diagnostic Windows GUI software • Spectrum Analyser and Channel Lockout facilities • Network-wide operation from any remote terminal • Non intrusive protocol – runs simultaneously with the application • Over-the-air re-configuration of user parameters. • Storage of data error and channel occupancy statistics • In-built Error Rate testing capabilities • Diagnostics parameters available: <ul style="list-style-type: none"> • Transmitter Power • Received Signal Strength • DC Supply Voltage • Received Frequency Error • Radio Temperature
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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"> • 900 MHz: 500 mA nominal @ 1 W • 2.4 GHz: 800 mA nominal @ 0.5 W
Receive Current	<ul style="list-style-type: none"> • 900 MHz: <110 mA nominal @ 13.8 Vdc • 2.4 GHz: <100mA nominal @ 13.8 Vdc
Sleep Mode	Software Controlled
Housing & Dimensions	<ul style="list-style-type: none"> • 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.) • KBxxx : Bare board 129 mm X 31 mm X 55 mm (5.08 in. X 1.22 in. X 2.17 in.)
Mounting	Integrated Mounting Holes or DIN Rail mounting (optional)
Weight	0.5 kg (1.1 lbs.)
Warranty	3 years on parts and labor

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

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

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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)
	2.4 GHz Frequency Band
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

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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

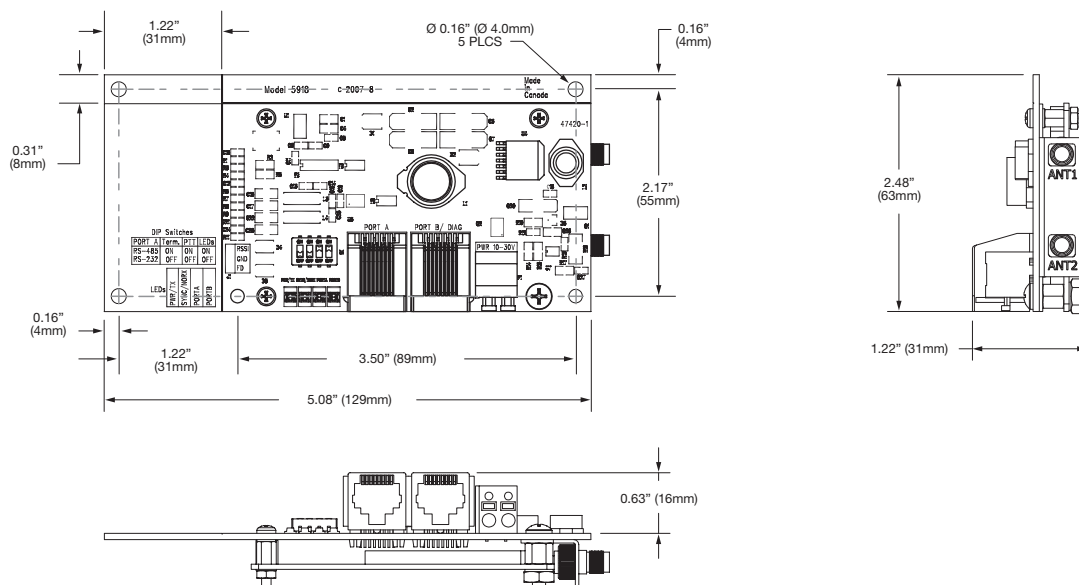
Contact your local sales office for accessories

* Export restrictions may apply. Contact factory for details.

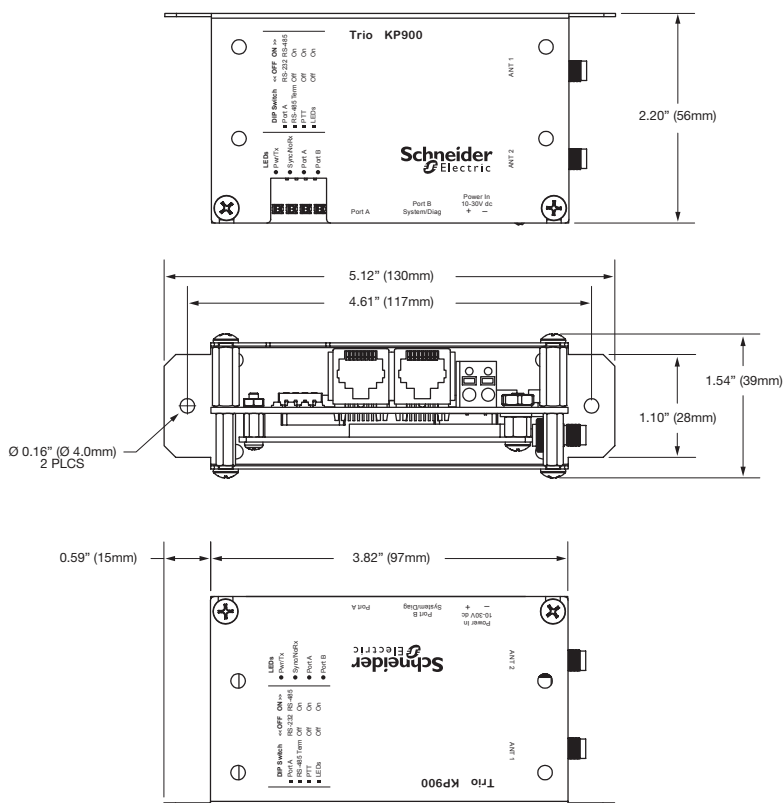
Trio K-Series

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KB900 | KB240 (board only)



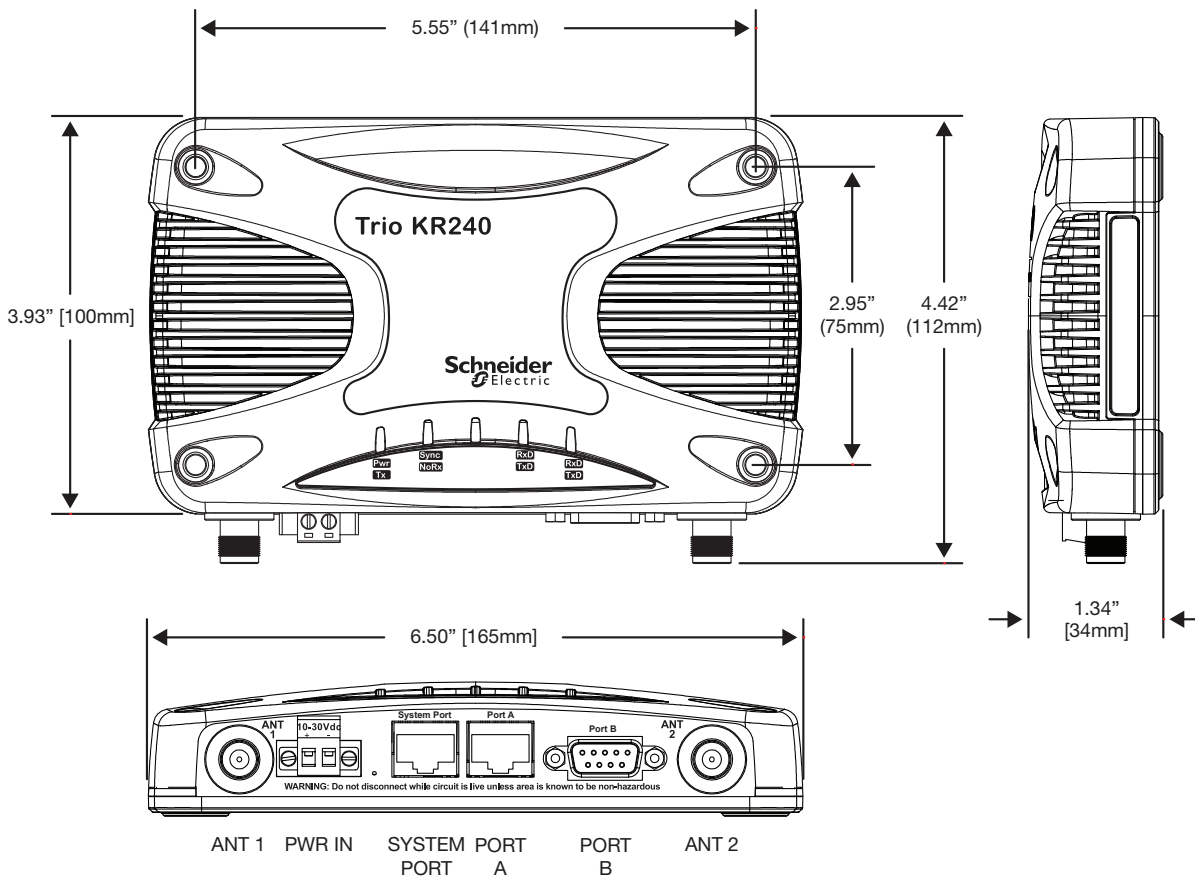
KP900 | KP240 (compact enclosure)



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KR900 | KR240



Footnote: This product is RoHS-compliant. Accessories sold separately.

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Schneider Electric

Process Automation SCADA & Telemetry
 415 Legget Drive, Suite 101, Kanata, Ontario K2K 3R1 Canada
 Direct Worldwide: +1 (613) 591-1943
 Email: telemetrysolutions@se.com
 Fax: +1 (613) 591-1022
 Toll Free within North America: +1 (888) 267-2232
www.se.com



Part Number TBULM08003-21 v17