SCADAWave Ultra-Series
Spread Spectrum Data Radio

Features:

- Robust, 900MHz frequency-hopping spread spectrum technology
- Up to 256kbps over-air data rates
- Ultra long range high performance receiver
- Multistream™ simultaneous data stream support
- KwikStream™ high speed single radio repeater mode
- Configurable as repeater or network bridge
- SCADAWave Manager -user friendly configuration and diagnostics interface.
- 3-Year Warranty (parts and labor)

SCADAWave Ultra-Series radio modems are designed to provide reliable and secure serial data communication in the license-free 900MHz ISM band. Ultra-Series radios use advanced digital modulation and signal processing techniques to achieve exceptionally high data throughput efficiency and the product's advanced frequency-hopping technology satisfies the most demanding SCADA requirements. Using innovative bridging and repeating techniques, the versatile Ultra-Series extends the operational radio range well beyond that of traditional spread-spectrum systems. The products are available in a wide range of frequency bands and carry the best warranty in the industry.

As with all SCADAWave radio solutions, the Ultra-Series 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, SCADAWave radios instantly bring up-to-date communication technology and performance to your network.

Applications

Ultra-Series radio products 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. The radios are compatible with the powerful SCADAWave E-Series Base Stations and Hot Standby units and can be ordered as a CSA Class I, Division II-compliant product.

Features

Designed for maximum value and functionality Control Microsystems has incorporated a wide range of state-of-the-art features in the Ultra-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 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 SCADAWave radios offer maximum versatility by providing local and over-the-air configuration options.

SCADAWave Manager

As the Network Management and Remote Diagnostics environment for all SCADAWave radios this tool helps to eliminate system down-time 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. SCADAWave Manager 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 SCADAWave Ultra-Series is 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.

SCADAWave Ultra KR5O Specifications

Functional		
Location	Master, remote, repeater or network-bridge	
Unlicensed Radio Frequency Range	902-928MHz region-specific versions available	
Operational Modes	Half-duplex, pseudo full-duplex	
RF Channel Data Rate	32,000/64,000/128,000 or 256,000bps	
Features		
Configuration Interface	SCADAWave Manager: configuration, network management and diagnostic windows GUI software	
Radio Frequency Accuracy	±2.5ppm	
Transmitter	Power:	0.01 - 1W (+30dBm) 0.5dB steps, user-configurable with over-temperature and reverse power protection (VSWR)
	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
	Collision Avoidance:	Channelshare™ collision avoidance system
	Firmware:	Field-upgradeable Flash memory
General	Temperature Range:	-40 to +70ºC, (-40 to 158ºF)
	Power Supply:	10-30Vdc (13.8Vdc nominal)
	Transmit Current:	500mA nominal @ 1W
	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 139 (RSS 210)
	ACA:	AS1468-2003
	CSA:	Class I, Division II, Groups (A, B, C, D) for Hazardous Locations ANSI/UL equivalent)
Warranty	3-Year parts and labor	

Model Code

Tyxxx-aabbb-cde represents the part number matrix

Code T	Select: Model Type
K	K-Series

Code y	Select: Unit Type
R	Remote Station

Code xxx	Select: Generic Frequency Band
900	900MHz

Code aa	Select: Frequency (900MHz bands)
00	License-free band 902 to 928 MHz (FCC/IC)
01	License-free band 915 to 928 MHz (Australia)
02	License-free band 921 to 928 MHz (New Zealand)
03	License-free band 902 to 915 MHz (Brazil)

Note: Other frequency bands available upon request.

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

Code c	Select: Options 1
E	Encryption and Diagnostics

Code d	Select: Options 2
H	Hazardous Environment Class1 Div2

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: SCADAWave Ultra-Series KR50 Remote Station, 900MHz band with a specific frequency range of 902 to 928MHz, a 32 to 256kbps modem, Encryption and Diagnostics and Class1 Div2 rating.

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

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

Printed in Canada ■ V016 ■ M01011-58