SCADAWave M-Series
Licensed Digital Data Radios

Features:

- 400-520MHz band operation
- Up to 9600bps true over-air data rates
- Synthesized digital data radio design
- High frequency stability
- Compatible with E-Series Base/Repeater and Hot Standby Base stations
- SCADAWave Manager -user friendly configuration and diagnostics interface.
- 3-Year Warranty (parts and labor)

SCADAWave M-Series licensed UHF radio modems are designed to provide the reliable transmission of data for SCADA, telemetry and other information, and control applications. M-Series radios use advanced digital modulation and signal processing techniques to achieve exceptionally high data throughput efficiency using traditional licensed narrow band radio channels. 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 M-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

M-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 M-Series:

Data modem: Advanced technology DSP-based GMSK digital data modem featuring built-in error checking and true 2400/4800bps, 4800/9600bps or 9600bps over-the-air data rates. The M-Series radios boast intelligent transmitter control (auto Tx on data), simplex and half-duplex operational modes and support industry-standard protocols including Modbus, DNP3 and IEC 60870-5-101.

Radio: Synthesized digital data radio design with high frequency stability and software-selectable Tx and Rx frequencies. 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.

* Local (unit) diagnostics only when connected to M-Series radio.

Design and Environmental

The SCADAWave M-Series is built using a compact, lightweight housing ensuring maximum reliability together with ease-of-installation and serviceability. Full specification operation is guaranteed over the entire -30 to +60°C, (-22 to 140°F) temperature range.

SCADAWave MR40 Specifications

Functional		
Location	Remote station	
Licensed Radio Frequency Range	400-470MHz or 450-520MHz	
Operational Modes	Simplex and half-duplex	
RF Channel Data Rate	2400/4800bps, 4800/9600bps or 9600bps	
Features		
Configuration Interface	SCADAWave Manager (Windows™-based GUI software) for configuration, network management and diagnostics	
Radio Frequency Accuracy	±1.5ppm (-30 to 60°C) (-22 to 140°F) ambient	
Transmitter	Power:	0.1 to 5W (+20 to +37dBm) ±1dB, software-adjustable
	Modulation:	Narrow band GMSK
	PTT Control:	Auto (Data) / RTS line
Receiver	Sensitivity:	-116dBm for 12dB SINAD
	Intermodulation:	Better than 65dB
	Spurious Response:	Better than 70dB
	Mute:	Programmable digital mute
Connections	User Data Port:	DE-9 female port wired as DCE (modem) Separate connections on DB9 for simultaneous user and diagnostics data
	Antenna:	N female bulkhead
	Power:	2 pin locking, mating connector supplied
	LED Display:	Multimode LED Indicators for Pwr, Tx, Rx, Sync, Data Port TxD and RxD data
Modem	Data Serial Port:	RS-232, DCE, 300-19,200bps asynchronous
	Diag. Connection:	RS-232, 19,200bps asynchronous
	Data Interface:	3-wire data interface (TxD, RxD & GND) RF carrier-driven DCD output for collision management
	Analog Interface:	Tx/Rx analog interface for external FSK/FFSK modems
	Data Buffer:	8Kbyte of on-board RAM
	Bit Error Rate:	< 1x10-6 @ -115dBm (2400 bps) < 1x10-6 @ -114dBm (4800 bps) < 1x10-6 @ -106dBm (9600 bps)
General	Temperature:	-30 to +60°C, (-22 to 140°F)
	Power Supply:	13.8VDC nominal (10-16VDC)
	Transmit Current:	600mA nominal @ 1W 1500mA nominal @ 5W
	Receive Current:	<170mA nominal
	Enclosure:	Solid die-cast alloy
	Dimensions:	154 x 102 x 29 mm (6.1 x 4.1 x 1.2 inches)
	Weight:	0.32kg (0.71lbs)
Approvals and Certifications	FCC PART 15, PART 90 IC RS119, ICES-001 ACA AS4295-1995 (Data) ETSI EN300 113 Optional 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
M	M-Series

Code y	Select: Unit Type
R	Remote Station

Code xxx	Select: Generic Frequency Band
450	Generic 450MHz

Code aa	Select: Frequency (400MHz bands)
M	400 to 470MHz (Tx & Rx)
H	450 to 520MHz (Tx & Rx)

Note: Other frequency bands available upon request.

Code bbb	Select: RF Channel Data Rate & Bandwidth (Internal Modem)
000	Analog only 12.5kHz
001	2400bps 12.5kHz / 4800bps 25kHz
002	4800bps 12.5kHz / 9600bps 25kHz
003	FCC/IC 9600bps 12.kkHz
004	ETSI 4800bps 12.5kHz

Code c	Select: Options 1
D	Diagnostics

Code d	Select: Options 2
H	Hazardous Environment Class1 Div2

Note: Specify internally or externally fitted duplexers. Externally fitted require feeder tails.

Code e	Select: Hot Standby Configurations
0	No Options

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

Example: MR450-M003-DH0 specifies: SCADAWave M-Series, Remote Station, Generic 450MHz band with a specific frequency range of 400 to 470MHz, a 9600bps modem with a bandwidth of 12.5kHz, Diagnostics, Class1 Div2.

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

Description	Part Number
Programming and Communication Cables	
SCADAWave Manager M Series Programming and User Data Cable	297817
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
Other	
SCADAWave Manager Configuration/Diagnostics software package	297826

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