

# SCADAWave Ultra JR50

## Spread Spectrum Ethernet Data Radio

### Features:

- Dual Ethernet ports with built-in Ethernet switch
- 900MHz and 2.4GHz frequency-hopping spread spectrum technology
- Advanced security with AES 256-bit encryption
- 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 Ethernet repeater mode (Store and Forward)
- LinkXtend™ network bridge functionality
- Network Management and Remote Diagnostics with Embedded HTML web server
- Embedded Serial Device Servers: PTP and PTMP
- 3-Year Warranty (parts and labor)



Control Microsystems brings Wireless Ethernet connectivity to the SCADA engineer's toolkit with the SCADAWave JR50 Ethernet data radio, an innovative pairing of unlicensed spread spectrum radio with "IP over Ethernet" technologies.

Combining standard features like dual Ethernet ports, built-in Ethernet switch, 1W (900MHz), 0.5W (2.4GHz), 100mW (2.4GHz Europe ETSI) radio transmitter, extended operational temperature range and ruggedized metal enclosure, the JR50 is a serious radio for serious applications. The product shares many of the same powerful features as the K-Series radios including support for simultaneous data streams, high speed repeater mode and network bridging. The JR50 is HazLoc-rated to CSA Class 1 Div 2 (900 MHz) and ATEX II 3G (2.4GHz ETSI version only, pending approval), uses an embedded HTML web server for configuration, diagnostics and network management, and is covered by an industry leading 3-year warranty.

As with all SCADAWave radios, the JR50 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.

#### The IP Advantage

"IP (Internet Protocol) over Ethernet" is the de facto standard for providing high speed communications over the Internet

and throughout the majority of commercial networks, including corporate LANs and WANs. It enables the corporate office to extend onto the plant floor, and beyond to remote assets such as field-installed controllers and intelligent sensors. Network management techniques, once the exclusive domain of IT engineers, can now be applied to critical SCADA system components. Data flow can be better controlled, consolidated and made available anywhere there's an Ethernet connection.

#### Secure Data is Critical

Safe and secure data traffic is critical to any modern SCADA system and a JR50 hallmark. The product's 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 J-Series making the product unique in the marketplace:

Data modem: Advanced technology GFSK digital data modem featuring error checked high data throughput. Dual independent Ethernet ports selectable as 10 or 100

Base-T, support for all Ethernet protocols (DHCP, HDP, TCP, MODBUS, DNP3), Auto or Manual DHCP configuration, and dual industry-standard TNC antenna connectors.

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.

#### Network-Based Tools

Radio configuration, system management and remote diagnostics are efficiently handled by an embedded HTML web server. No additional software is required! Features include:

- Remote and local fully transparent simultaneous Network Management and Diagnostics
- Network-wide access from any radio modem
- Over-the-air reconfiguration
- Powerful system commissioning and troubleshooting tools
- Local and Remote Field-upgradeable firmware

#### Design, Environmental and Power

The SCADAWave JR50 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 +65°C, [-40 to 149°F] temperature range. Overall power consumption is optimized with a user-controlled smart sleep mode.

## SCADAWave Ultra JR50 Specifications

Functional	
<b>Location</b>	Access Point, remote, repeater or network-bridge
<b>Unlicensed Radio Frequency Range</b>	902-928MHz region-specific and 2.4GHz ISM band versions available
<b>RF Channel Data Rate</b>	256kbps
Features	
<b>Configuration Interface</b>	Embedded HTML web server
<b>Radio Frequency Accuracy</b>	±2.5ppm
<b>Transmitter</b>	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: Digital/GFSK Tx Key-up Time: <50µS
<b>Receiver</b>	Selectivity: Better than 50dB Intermodulation: Better than 65dB
<b>Connections</b>	Ethernet: RJ-45 Dual Bridging IEEE 802.3 Ports Serial: DE-9 Female - 2 x 3-wire, TxD/RxD RS-232 Serial Ports plus CTS/RTS Configuration Port: Either Ethernet Port can be used for diagnostic, configuration and reprogramming 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, LAN 1 & LAN 2 (Link and Act)
<b>Modem</b>	Bit Error Rate: < 1x10 <sup>-6</sup> @ -102dBm (900MHz), TBA (2.4GHz) Encryption: 256-bit AES encryption (within North America/Australia only) Collision Avoidance: Channelshare™ collision avoidance system Firmware: Over-the-air and field upgradeable Flash memory
<b>Ethernet</b>	Ethernet Ports: Dual 10/100 Mbps (auto-sensing) with MDI/MIDX (auto-detecting) interface Protocols: Ethernet (including DHCP, UDP and TCP) DHCP Modes: Auto and Manual NTP: Client/Server Time Synchronization Support
<b>Serial Device Servers</b>	PTP Serial connectivity using PPP, TCP or UDP protocol (unicast) PTMP Serial connectivity using UDP protocol (multicast) Diagnostics via UDP
<b>General</b>	Temperature Range: -40 to +65°C, (-40 to 149°F) Power Supply: 10-30Vdc (13.8Vdc nominal) Transmit Current: 500mA nominal @ 1W (900MHz), 800mA nominal @ 0.5W (2.4GHz), TBA @100mW (2.4GHz ETSI) Receive Current: <150mA 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: 0.7kg (1.54lbs.)
<b>Diagnostics</b>	Network wide operation from any remote terminal Non-intrusive protocol, runs simultaneously with the application Over the air reconfiguration of all parameters Storage of data error and channel occupancy statistics In-built error rate testing capabilities
<b>Approvals and Certifications</b>	FCC: PART 15 IC: IC RSS210 ACA: AS/NZS 4268 CSA: Class I, Division II, Groups (A, B, C, D) for Hazardous Locations ANSI/UL equivalent (900 MHz) ATEX: II 3G Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (2.4GHz ETSI version only, pending approval) ETSI: EN 301 489 (2.4GHz, 100mw version only)
<b>Warranty</b>	3-Year parts and labor

## Model Code

Code T	Select: Model Type
J	J-Series
Code y	Select: Unit Type
R	Remote Station
Code xxx	Select: Generic Frequency Band
900	900MHz
240	2.4GHz
Code aa	Select: Frequency
	<b>900MHz</b> <b>2.4GHz</b>
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)
Code bbb	Select: RF Channel Data Rate & Bandwidth (Internal Modem)
002	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 (900 MHz) ATEX II 3G Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (2.4GHz ETSI version only, pending approval)
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: JR900-00002-EH0** specifies: SCADAWave JR50 Remote Ethernet Station, 900MHz band with a specific frequency range of 902 to 928MHz, a 256kbps modem, Encryption and Class1 Div2 rating.

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

Description	Part Number
<b>Programming and Communication Cables</b>	
Ethernet Cable, 6 feet (2m)	297245
SCADAWave Communication Cable, DE-9M to RJ45M - Modem, 10 feet (3m)	297821

## Physical Dimensions - Remote Data Radio - JR50

