ZumLink

900 MHz Ethernet Radios

Key Features

High Speed: Up to 850 kbps throughput with upgrade to 2 Mbps coming soon

Long Range: Up to 40 miles with clear line of sight

Error Free Communication: CRC, FEC and ARQ

Low Current Consumption: 270 mA @ 12V in transmit and 100 mA @ 12 V in receive

Diagnostics: allows real-time access to receive signal characteristics for all used channels

Flexible Interface: One Ethernet, two RS232, and one USB interfaces

Noise Immunity: Superior performance in noise congested environments

High Reliability: 100% tested for performance from -40°C to +60°C

Overview

FreeWave Technologies' latest generation of radios are designed with more flexibility, increased throughput, and lower power consumption to meet the demands of the many wireless applications today.

This user-configurable 900 MHz product is available as an enclosed radio. An Ethernet port, two RS232 serial ports, and one USB port is provided. The FreeWave ZumLink Series of serial radios have been designed to provide the performance, reliability, and quality that our customers have come to know and expect in our products.

All radios are designed, manufactured and tested in Boulder, CO.

MODEL	FORM FACTOR	PACKAGING
Z9-PE	7.52 x 4.31 x 2.52 in	Enclosed

FreeWave®

ZumLink 900 MHz Ethernet Radio: Technical Specifications

TRANSMITTER

Frequency Range	902 to 928 MHz
Output Power	10mW to 1W; user selectable
Data Link Range	40 miles
Modulation	GFSK and 8-ary FSK
Channel Sizes	115.2, 345.6, 691.2, 1382.4, 3225.6 kHz
RF Data Rates	115.2, 250, 500, 1000, 4000 kbps
Hopping Channels	up to 111; RF Data Rate Dependent
Hopping Patterns	Up to 16
Hopping Rates	400ms, 200ms, 100ms, 50ms, 25ms

RECEIVER

Sensitivity	-106 dBm @ 115.2 Kbps
IF Selectivity	> 40 dB
System Gain	136 dB

DATA TRANSMISSION

Error Detection	CRC, FEC and ARQ
Link Throughput (Ethernet)	up to 2000 kbps
Link Throughput (RS232)	up to 250 kbps
Data Encryption	128-bit and 256-bit AES
Protocol	Proprietary CSMA

INTERFACES

Data Connectors	Three RJ-45 (one Ethernet, two Serial)
USB Connector	micro USB
RF Connector	TNC

POWER REQUIREMENTS

Operating Voltage	+6 to +30 VDC (± 10%)
Transmit Current	270 mA @ 12 VDC
Receive/Idle Current	100 mA @ 12 VDC
Max Power	7W

GENERAL INFORMATION

Operating Temperature	-40°C to +60°C
Humidity	0 to 95%, non-condensing
Dimensions	7.52 x 4.31 x 2.52 in
Weight	750 g

ZumLink 900 MHz Ethernet Radio: Applications
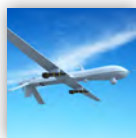
Oil and Gas	Agriculture	Utilities	Defense	SCADA	Mining	Fleet Management	Municipal	Enterprise

FreeWave Technologies, Inc.

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For more information, visit www.freewave.com

ZumLink

900 MHz Serial Radios

Key Features

High Speed: Up to 850 kbps throughput with upgrade to 2 Mbps coming soon

Long Range: Up to 40 miles with clear line of sight

Error Free Communication: CRC, FEC and ARQ

Low Current Consumption: 1230 mA @ 3V, 680 mA @ 5V

Diagnostics: allows real-time access to receive signal characteristics for all used channels

Flexible Interface: Either two RS232 or two TTL serial interfaces

Noise Immunity: Superior performance in noise congested environments

High Reliability: 100% tested for performance from -40°C to +85°C

Overview

FreeWave Technologies' latest generation of radios are designed with more flexibility, increased throughput, and lower power consumption to meet the demands of the many wireless applications today.

This user-configurable 900 MHz product is available as an OEM board level radio. It shares the same 14-pin interface found on our MM2 OEM board level radios easing migration. The FreeWave ZumLink Series of serial radios have been designed to provide the performance, reliability, and quality that our customers have come to know and expect in our products.

All radios are designed, manufactured and tested in Boulder, CO.

MODEL	FORM FACTOR	OPTIONS
Z9-C	2 L x 1.4 W x 0.3 H (in)	RS232
Z9-T	2 L x 1.4 W x 0.3 H (in)	TTL

FreeWave®

ZumLink 900 MHz Serial Radio: Technical Specifications

TRANSMITTER

Frequency Range	902 to 928 MHz
Output Power	10mW to 1W; user selectable
Data Link Range	40 miles
Modulation	GFSK and 8-ary FSK
Channel Sizes	115.2, 345.6, 691.2, 1382.4, 3225.6 kHz
RF Data Rates	115.2, 250, 500, 1000, 4000 kbps
Hopping Channels	up to 111; RF Data Rate Dependent
Hopping Patterns	Up to 16
Hopping Rates	400ms, 200ms, 100ms, 50ms, 25ms

RECEIVER

Sensitivity	-106 dBm @ 115.2 Kbps
IF Selectivity	> 40 dB
System Gain	136 dB

DATA TRANSMISSION

Error Detection	CRC, FEC and ARQ
Link Throughput (TTL)	up to 2000 kbps
Link Throughput (RS232)	up to 850 kbps
Data Encryption	128-bit AES
Protocol	Proprietary CSMA

INTERFACES

Data Connector	Dual row 14-pin header, 2mm pin spacing
RF Connector	MMCX

POWER REQUIREMENTS

Operating Voltage	+3 to +5 VDC (± 10%)
Transmit Current	1230 mA @ 3V, 680 mA @ 5V
Idle/Receive Current	30 mA @ 3V; 13 mA @ 5V

GENERAL INFORMATION

Operating Temperature	-40°C to +85°C
Humidity	0 to 95%, non-condensing
Dimensions	2 L x 1.4 W x 0.38 H (in)
Weight	15 g

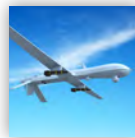# ZumLink 900 MHz Serial Radio: Applications

Oil and Gas   **Agriculture**   **Utilities**   **Defense**   **SCADA**   **Mining**   **Fleet Management**   **Municipal**   **Enterprise**

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