Messenger 900FS Spread Spectrum Radio

License-free Wireless Communications – Messenger 900FS radios operate in the 900MHz license-free ISM band, providing plug-and-play simplicity with extreme data integrity. By automatically hopping among up to 112 different frequencies, the radios avoid and reject interference from other wireless devices as well as spurious man-made and natural noise sources.

High Security Data Encryption - Messenger series radios encrypt all messages sent over the air. The AES encryption used is the same technology used for banking, national security and other critical applications. Built-in data encryption and decryption ensures that your data is kept out of unauthorized hands, yet the radios are easy to use since encryption is transparent to the sending and receiving equipment.

Supported by most PLCs, RTUs & HMIs Messenger series radios can be used with nearly any industrial control device with a standard serial port. No modem control signals are used and messages are transferred in error-checked packets, compatible with standard protocols including Modbus, DF1 and DNP3.

Network Management & Diagnostics - Messenger 900FS radios have a separate port for live management of any radio in the network, as well as local diagnostics. This feature can be used simultaneously with normal data operation.

Integral Repeater Functionality – Any Messenger 900FS radios can also serve as repeaters, effectively extending the range of your wireless network when a reliable point-to-point link cannot be established.

USB and RS-232 Interfaces – Messenger Series radios offer two communications interfaces to simplify connection into nearly any system; RS-232 for use in legacy configurations, and USB for more modern systems and PC computers. When RS-232 is used for the data port, USB is used for the diagnostics port; and vice-versa.

Rugged Reliability – Messenger 900FS radios are 100% tested over an extended temperature range of -40°C to 70°C, and backed by an industry leading 3-year factory parts and labor warranty.

A typical SCADA System with a Messenger 900XS radio connecting a PLC to a wireless network to access wireless I/O.
## Specifications

### RF Performance
- **Transmit Power**: 1 Watt nominal, 10mW to 1 Watt (user configurable)
- **Receiver Sensitivity**: -108 dBm @ 115,200 bps data rate (BER $10^{-4}$)
- **RF Selectivity**: 50dB at 896MHz, 935MHz
- **Operating Frequency**: 902MHz to 928MHz
- **Spread Spectrum**: FHSS (Frequency Hopping Spread Spectrum)
- **Modulation**: GFSK (Gaussian Frequency Shift Keying)
- **Channel Capacity**: 105 hop sequences share 112 frequencies

### Communications
- **Supported Network Topologies**: Point-to-Point, Point-to-Multipoint
- **Encryption**: 128-bit AES Encryption (user configurable)
- **Serial Data Rate (RS-232)**: 1200 baud to 230400bps (user configurable)

### Certifications (partial list)
- **FCC Part 15.247**: KNY-42182112519
- **Industry Canada (IC)**: 2329B-FGR209

### Terminal Block (power)
- Removable, 3.5mm (0.138"), 12 to 22AWG, 15A/contact maximum

### Antenna Connector
- MMCX, 50 ohms, unbalanced

### Mounting
- 35mm. DIN rail

### Dimensions
- 1.4"W x 3.7"H x 3.8"D (includes terminal block and elevation off panel on DIN rail)

### Environment
- -40°F (-40°C) to 158°F (70°C), 5%RH to 95% RH, non-condensing

### Power
- **Receive/Idle**: 10 to 30Vdc
- **Transmitting**: 0.5W
- 3.75W (1 Watt output)
- 2.75W (0.5 Watt output)
- 1.50W (100 mW output)

### Warranty
- 3 years, factory parts and labor

### Part Numbers
- **98-1402**: 900 MHz Messenger 900FS (Freewave) Spread Spectrum External Radio, MMCX Antenna Connector

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