Messenger Series
Rugged industrial communications devices for SCADA systems

RMX Radio/Leased Line Modem

RELIABLE SCADA communications over Leased Telephone Lines and non-digital radios

- Fast: 1200, 2400, and 4800 Baud. Up to 4 times faster than Bell 202 modems!
- Dual Port – USB and RS-232/485. Simultaneous communications and setup/diagnostics
- Safe transformer isolated 2-wire communications over Leased Telephone Lines
- Supports data communications over older audio radios with Push-to-Talk function
- Secure AES-128 encryption – secures even non-secure protocols such as Modbus
- All soft electronic configuration – no DIP switches, jumpers, or adjustment pots
- Automatic gain adjustment – corrects for data link variations, eliminates manual installation setup
- Easy setup and extensive system diagnostic tools by built-in configuration/display pages
- 10Vdc to 30Vdc DC power, ideal for battery backed systems
- Compact DIN Rail Mount design saves panel space and simplifies installation
- Compatible with the RMX-2400 modems
- Wide operating temperature range: -40°C to +70°C
- 3-year factory warranty on parts and labor

RMX Radio/Leased Line Modem

Messenger RMX Modems provide a reliable means of sending data over leased telephone lines, low-cost twisted pair wires, and older audio-type VHF/UHF radios (with Push-to-Talk inputs). The modems support over-the-link data rates of 1200, 2400 and 4800 baud – 4 times the speed of older Bell 202 modems.

USB, RS-232 and RS-485 Interfaces – Messenger RMX Modems offer three communications interfaces to simplify connection into nearly any system; an RS-232/485 port for legacy point-to-point and multi-drop configurations, and a USB port for more modern systems and PC computers. Either port may be used as the main data port while the other port is used simultaneously as a diagnostic, message trace and configuration port.

Point-to-Point and Multi-drop Links - Messenger RMX modems support point-to-point and multipoint configurations, with integral message collision protection.

High Security - Messenger RMX modems support CRC data validation and AES-128 encryption to secure SCADA control and monitoring communications, even with older non-secure protocols such as Modus and DF1. These unsecure messages are packetized and encapsulated inside secure data "wrappers" and then verified and unencrypted on the other end, providing a modern day secure data link for legacy equipment.

Automatic Level Tracking - Messenger RMX modems have unique automatic level tracking circuitry that constantly adjusts for variations in receive signal levels for superior communications reliability and ease of field installation.

Easy Setup - Messenger RMX modems have built-in simple configuration screens, accessible with any standard terminal program (such as Windows HyperTerminal). There are no DIP switches, jumpers or pots. All settings are saved in non-volatile memory with no battery to replace.

Extensive System Diagnostics - Messenger RMX modems have a collection of built-in system diagnostic tools to help diagnose data link problems in the field. These include performance statistics (Transmit, Receive, and Data Error message counts), receive levels, uptime, message tracing, configurable test tones, and automatic loopback tests that can be initiated from either end of a communications link.

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

Specifications

Radio Modem Interface

Interface Signals	Audio IN, Audio OUT, Push-to-talk (switch to Gnd = ON), Carrier Detect (optional)
Audio Output Level	1mV to 1600mV, user settable, into >= 1Kohm load
Audio Input Level	1mV to 3000mV, automatic gain adjust
Push-to-Talk Interface	FET transistor switching to Ground (up to 30Vdc, up to 500mA)
Carrier Detect Interface	Contact closure to Ground (for ON), 100mA, 10K ohm pull-up to 5Vdc

Leased Line/Twisted Pair Interface

Interface Signals	L1 and L2 (balanced transformer output, 600 ohms)
Audio Output Level	-40dB to +6dB, user settable,
Audio Input Level	-40dB to +6dB, automatic gain adjust

General

Operating Mode	Half Duplex, automatic message packetizing
Modulation	FSK (Frequency Shift Keying)
Supported Network Topologies	Peer-to-peer, Point-to-Point, Point-to-Multipoint
Encryption	128-bit AES Encryption
Serial Data Rate (Data Link)	1200 baud, 2400 baud and 4800 baud, user settable
Serial Data Rate (RS-232/RS-485)	1200 baud to 115K baud, user settable
Configurable Timing Parameters (1mS to 32,000mS, 1mS increments)	Packetizing Gap, RS-485 Lead & Trail Delay, Modem (carrier) Lead & Trail Delay, Quiet Time and Tx Holdoffs

Terminal Blocks	Removable, 3.5mm (0.138"), 12 to 22AWG, 15A/contact maximum
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	10 to 30Vdc (via terminal block), or 5Vdc via USB
Warranty	3 years, factory parts and labor

Modem Part Number	**94-1001**	Messenger RMX – 1200/2400/4800 Baud Radio/Leased Line Modem
Mating USB Cable	**99-41xx**	USB Type A to USB Mini B (xx is length in ft. – available lengths: 01, 03, 06, 10, 15)
Mating RS-232 Cable	**99-21xx**	RJ-45 to DB9F (female) (xx is length in ft. – available lengths: 01, 02, 03, 05, 07, 10)
Mating RS-485 Cable	**99-30xx**	RJ-45 to Twisted Pair Pigtail (xx is length in ft. – available lengths: 01, 02, 03, 05, 07, 10)

Represented by: