

MDM-Q9604 high-speed modem



The MDM-Q9604 networking capability provides a multifunctional Data Services IP Gateway for legacy communications systems, including Serial Control over IP (SCoIP), Voice over IP (VoIP), and synchronous (encrypted) serial data transport over IP to a remote modem.

New features added include an embedded HF channel simulator, a probe waveform graphically displaying HF-V/UHF system characteristics, and 100 programmable waveform/networking configuration presets.

Rockwell Collins' MDM-Q9604 high-speed four-channel HF-V/UHF data modem is capable of transmitting data over a standard 3 kHz SSB (Single Sideband) at 9600 bps, 6 kHz ISB (Independent Sideband) at 19200 bps, and four-channel (12 kHz bandwidth) operation providing data rates up to 64000 bps. The MDM-Q9604 modem provides an extensive waveform selection including a V/UHF autobaud waveform with data rates up to 76800 bps.

The MDM-Q9604 modem includes multiple, independent modem functionality allowing up to four simultaneous modem functions within a single MDM-Q9604 hardware platform. In addition, a waveform relaying and translation feature has been added enabling the receipt of one waveform mode on one audio channel, then translating the data to another waveform type for transmission from a second audio channel.

.SYSTEM FEATURES

- › Data transmission rates
 - 75 bps to 16000 bps in single HF channel operation
 - 9600 bps to 32000 bps in two HF channel operation
 - 9600 bps to 48000 bps in three HF channel operation
 - 12800 bps to 64000 bps in four HF channel operation
 - 2400 bps to 76800 bps in single V/UHF channel operation (if 25 kHz external audio port is available from V/UHF radio)
- › Designed to operate with Rockwell Collins HF Messenger™ data link (STANAG 5066 protocol) management software
- › Fully functional Ethernet socket data and control interfaces

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- MIL-STD-188-110B Appendix C standard and high speed asynchronous data modes
- Asynchronous data mode compatible COTS applications such as Hyper-Terminal
- Software upgradeable from Ethernet port
- Linux® OS enabling ease of future enhancement integration
- Transmit and receive diversity (up to four channels)
- Turbo-equalization for enhanced performance gains
- Enhanced interferer cancellation for QAM data rates
- Voice over IP (VoIP) mode
- Serial Control over IP (SCoIP) remote control mode
- Multiple (up to four), independent modem functions within a single Q9604 hardware platform
- Waveform relay and translation; enabling the reception of a waveform on one audio channel, then encodes and modulates the data into a different waveform for transmission from another audio channel
- Comprehensive Built-in-Test (BIT)
- Graphical constellation, impulse response, and BER windows via the Q9604 built-in GUI
- Remote, front panel and GUI control
- JITC certification for MIL-STD-188-110B, including Appendices C and F
- DERA (QinetiQ) certified for STANAG-4539, Annex B

NEW MDM-Q9604 FEATURES

- Embedded 4-channel HF simulator, NATO validated for STANAG 4415. Features include presets for common ionosphere simulations, multiple configurable interferer types, simulations up to five multi-paths, and simulated STANAG 4203 HF radio filters. Noise types include Gaussian and CCIR noise simulating impulsive interferers such as lightning. The HF simulator function allows up to four independent channel simulations providing performance testing capability for MIL-STD 110B Appendix F.
- Probe Waveform for system troubleshooting; features graphical display of system ALC/AGC characteristics, signal power spectrum, and impulse response
- Up to 100 programmable waveform or mode configuration presets

DATA SERVICES IP GATEWAY

- VoIP function enables voice transmissions/receptions over IP with remote radio sites
- SCoIP capability supports remote control, over an IP link, of any serially controlled device
- SCoIP function is fully compatible with the entire HF Messenger suite of radio and modem control drivers
- Encrypted synchronous data over IP function allows transport of synchronous or asynchronous serial data over an IP link

MODES OF OPERATIONS

Waveform	Mode	Data Rates
MIL-STD-188-110B Appendix C	Coded PSK/QAM Uncoded QAM	3200, 4800, 6400, 8000, 9600 bps 12800 bps
MIL-STD-188-110B Appendix F	Coded PSK/QAM	9600, 12800, 16000, 19200 bps
STANAG 4285	Coded PSK Uncoded PSK	9600, 12800, 16000, 19200 bps 75, 150, 300, 600, 1200, 2400 bps
MIL-STD-188-110A	Coded PSK Uncoded PSK	75, 150, 300, 600, 1200, 2400 bps 4800 bps
STANAG 4529	Coded PSK Uncoded PSK	75, 150, 300, 600, 1200 bps 600, 1200, 1800 bps
STANAG 4415	Direct sequence spread spectrum	75 bps (NATO Robust Waveform)
STANAG 4481	Single channel FSK Multi channel FSK capable	75 bps 75 to 1200 bps in 75-bps increments with external mux/demux unit
Programmable FSK	FSK	50, 75, 150, 300, 600, 1200 bps
TE-204	4-Ary FSK	75 bps
STANAG 4539	QAM/PSK	9600, 8000, 6400, 4800, 3200, 2400, 1200, 600, 300, 150, 75 bps
Narrowband Airborne (2.4 kHz) waveform	QAM/PSK Uncoded QAM	8000, 6400, 4800, 3600, 2400, 1200, 600, 300, 150, 75 bps 7680 bps
Very High Data Rate (VHDR)		
Single channel	QAM/PSK	110B Appendix C plus 12800, 16000 bps
Two channel	QAM/PSK	110B Appendix F plus 24000, 32000 bps
Three channel	QAM/PSK	9.6, 14.4, 19.2, 24, 28.8, 38.4, 48 kbps
Four channel	QAM/PSK	12.8, 19.2, 25.6, 32, 38.4, 48, 64 kbps
MIL-STD-188-110B Appendix B 39-tone	QDPSK	75, 150, 300, 600, 1200, 2400 bps
MIL-STD-188-110B Automode	QAM/PSK/QDPSK/FSK	Comprised of MS-110B, Appendices B, C and F
V/UHF waveform (25 kHz audio bandwidth)	QAM/PSK	2.4, 6.4, 12.8, 25.6, 38.4, 51.2, 64, 76.8 kbps (encoded, interleaved, equalizer)
Probe waveform	PSK	Supports frequency bands up to 25 kHz enabling troubleshooting for 3, 6, 8.33, 12.5 and 25 kHz communications systems

SYSTEM SPECIFICATIONS

Data interfaces	EIA-232D, RS-422/423, MIL-STD-188-114 via synchronous/asynchronous serial port; 10/100 Base-T (IEEE 802.3U compatible) via Ethernet port	MTTR	Less than 15 minutes organizational
Receive audio	600 ohm balanced with dynamic range from -40 dBm to +10 dBm (0 dBm nominal)	Prime power (AC version)	85 VAC to 265 VAC, 47 to 440 Hz, 50 W max
Transmit audio	600 ohm balanced; configurable range -30 dBm to +10 dBm	Temperature	0 to +50°C operating; -40 to +70°C storage
Radio keyline	Contact closure, open collector, and 6-volt with each audio channel	Humidity	Up to 95% relative humidity without condensation
Remote control	EIA-232D unbalanced; socket control using HF Messenger or an external Windows®-based GUI application	Shock	MIL-S-901, Grade A, Class 1, lightweight, Type A (5-foot hammer blow all axes)
Embedded control	Front panel or Linux X-Windows Graphical User Interface (GUI)	Vibration	MIL-STD-167, Type 1
Keyboard (optional)	Standard PS/2	Mounting	Desktop or 19-inch rack
Mouse (optional)	Standard PS/2	Height	1.75 in (4.4 cm)
Video (optional)	VGA/SVGA standard 15-pin video port	Width (chassis only)	16 in (40.6 cm)
Processor	1.8 GHz Pentium® III	Depth	16 in (40.6 cm)
MTBF	57,000 hours calculated, ground benign environment at 25°C	Weight	8.6 lb (3.9 kg)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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Rockwell Collins delivers smart communication and aviation electronic solutions to customers worldwide. Backed by a global network of service and support, we stand committed to putting technology and practical innovation to work for you whenever and wherever you need us. In this way, working together, we build trust. Every day.

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