FlexRadio MLS-9601™

PRELIMINARY SPECIFICATIONS

HIGH-POWER WIDEBAND HF SOFTWARE DEFINED RADIO (SDR) COMMUNICATIONS SYSTEM

FlexRadio's MLS-9601 1 Kilowatt Wideband SDR Communications System represents the pinnacle of modern HF communications technology, delivering unparalleled performance and flexibility for commercial, government, and defense applications. This system, proudly made in the USA, is specifically engineered for mission-critical environments where reliable, high-bandwidth communications is essential.

At the core of the MLS-9601 system is the advanced ML-9600X SDR transceiver, which, when paired with the FPA-1K power amplifier, provides robust and resilient HF communications across a broad spectrum. Leveraging the open SmartSDR API, the MLS-9601 allows for seamless customization, enabling rapid development and deployment of mission specific applications and waveforms. With the support for a wide range of military and NATO protocols, including 2G/3G/4G ALE, MIL-STD-188-110D, MIL-STD-188-141D, and critical STANAGS, the MLS-9601 is fully prepared to meet current and future communication demands.

Designed for versatility, the MLS-9601 excels in both local and remote operations, with IP-based control and integration options that include GNU Radio compatibility and multi-OS support. Unlike receiver-exciter based systems, a built-in 100W amplifier allows the system's ML-9600X transceiver to operate independent of the high power amplifier, providing unique flexibility for diverse operational configurations.

The MLS-9601 is the ideal choice for organizations requiring a scalable, high-performance SDR platform capable of adapting to rapidly evolving communications requirements. FlexRadio's MLS-9601 not ony meets today's rigorous HF communication standards, but also anticipates tomorrow's needs, ensuring long-term value and reliability in any mission critical application.

SYSTEM COMPONENTS

- ML-9600X SDR Transceiver
- FPA-1K 1kW Power Amplifier

KEY FEATURES

- Up to 78 kHz transmit bandwidth/ Up to 1.2 MHz receive bandwidth
- IP-based Ethernet for local & remote control
- Standard/Protocols: 2G/3G/4G ALE, MIL-STD-188-110D, MIL-STD-188-141D, NATO STANAGS (4285, 4415, 4529, 4538, 4539, 5069)
- Transmission Modes: SSB, AM, CW, FM, Digital Data, Digital Voice, Pulse Modulation, Wideband & Multi-Tone Digital Modes, Automatic Link Establishment
- Integrated Modem
- API Support
- Four real-time 14MHz spectrum displays
- Optional GPSDO
- Optional Time Stamping

MLS-9601 SPECIFICATIONS

Electrical	
Frequency Coverage	1.8 MHz - 29.9999 MHz
System Power Output	1000 watts PEP (1:3:1 VSWR or less)
Internal Tranceiver PA Power Output	100 watts PEP (1:3:1 VSWR or less in bypass mode)
Exciter Output	+10 dBm outputs for low-power signal generation
Output Impedance	50-ohm
Tuning Steps	1 Hz increments
RF Output Connector	N-Type (alternate types available)
Ethernet Control	Yes (supports local and remote operation)
Duty Cycle	100% across all modes
VSWR Protection	Automatic shutdown for high VSWR
Cooling	Forced air with automatic fan speed control
Harmonic Suppression	> 60dB below carrier
IMD (Intermodulation Distortion)	-32 dB single tone (typical)
Operating Temperature	-10° C to + 50° C
Power Consumption	< 3.5 kVA at full output

Physical	
Rack Size (19in rack standard - 11U (1/4 rack)	19.25in H x 22.6 in W x 30 in D
Cooling	Forced air cooling, front-to-back airflow
Power Requirements	220 VAC, Single Phase
Environmental Protection	IP-rated for high dust and moisture environments

Operational	
Full Duplex Operation	Yes (capable of simultaneous RX/TX)
Split Site Operation	Yes, via Ethernet IP connectivity
Diversity Reception	Standard (requires two antennas)
Metering and Diagnostics	More than 20 measurable parameters available including voltage, current, power output, SWR, temperature monitoring
Advanced Features	
Real-Time Spectrum Displays	Up to 4 independent displays with 14MHz bandwidth each
Application and Waveform Support	Dedicated 4-core CPU for user-defined processing tasks and user developed waveforms
Precision Time Stamping	Optional high-precision time stamping for advanced applications including DF, TDOA, Beam Steering and more

Compliance and Standards	
Protocols	Supports MIL-STD and NATO STANAG waveforms
Certification	FCC, CE, and MIL-STD compliance TCP/IP control with RF and audio data exchanged over VITA-49