



*MXD1500
PROFESSIONAL RADIO
BASE STATION REPEATER*

Expand your Communication Coverage

PROFESSIONAL MXD1500 FAMILY OF RADIO BASE STATION REPEATERS

The MXD1500 Enhanced and MXD1500 Economy models offer rugged construction and extensive use of Surface Mount Technology providing outstanding reliability and efficiency for harsh operational conditions. Ideal for cost conscious users who want to expand their communication coverage without compromising on performance.

With advanced modular construction techniques, as found in military grade equipment, you will be assured of reliable and long lasting performance.

■ **PERFORMANCE**

The MXD1500 advanced design, uses the latest component technology to achieve superior performance in high RF environments.

The sensitive receiver features a wide switching bandwidth and at the same time, maintains good blocking, intermodulation and adjacent channel performance.

The broadband transmitter exciter module has very low spurious emission levels, and is followed by an efficient RF power amplifier. The optimised PA heatsink design results in lower transmitter temperature rise during continuous operation.

■ **RELIABILITY**

Reliability is designed into the MXD1500 and effective manufacturing quality control carries this into the finished product.

Rugged machined module housing construction and extensive use of surface mount technology provides outstanding reliability under the harshest conditions.

■ **CONSTRUCTION**

The MXD1500 is a compact and lightweight transceiver housed in a 2RU height (89 mm) fully welded steel case. The units conform to the 19" rack mounting standard and an optional slider rail kit can be fitted. The module construction has been designed for international EMC/EMI rules compliance and all RF modules are individually screened.

■ **FEATURES**

- With the Radio Service Software, you can easily select and programme the MXD1500 model's 255 RF channel capability, operating channels and channel frequencies. This software utility also enables you to assign any standard DCS code and CTCSS tone to any channel, programme and check RF parameters as well as remotely monitor, control and diagnose the base station.



- Complementing the wide RF switching bandwidth (greater than 10MHz in all bands) the MXD1500 has an exceptional frequency coverage between 30 MHz and 870 MHz.
- An extended low frequency transmitter modulator response (DC to 3.4 kHz) permits the use of the MXD1500 in paging and other data applications.
- An extremely fast transmitter rise time with controlled soft start results in low transient emissions.



- Fast mute action, combined with fast TX, makes the MXD1500 suitable for many trunking and data systems.
- Functionally independent TX and RX mean that crossbanding is easily accomplished.
- A non-predictive CTCSS decoder will recognise any valid tone and transmit a user associated TX tone.
- Continuously rated at full operating power, the MXD1500 has a thermally controlled high MTBF fan ensuring cooler PA operation .
- Low current consumption on both TX and RX.
- 255 RF channel capability with operating channels optionally selectable from rear inputs.
- An automatic PA protection circuit reduces the output power at high VSWR and high temperature.
- Advanced fractional synthesizer design.
- Fully configurable by hardware and software for special applications.

• **USER INTERFACE**

RF, analog and digital signal line accessibility at the rear panel means that the MXD1500 is a versatile transceiver which can be used in systems configured to your requirements. For trunking applications, special system control functions are included.

The base station is serially programmable on a per channel basis using MXTTOOLS programming software. This software utility also permits remote monitoring, control and diagnostics of the MXD1500.

Parameters such as PTT, Mute/squelch, Alarms, Digital I/O etc, can also be monitored or controlled independently. Real time measured analog parameters include: CTCSS decoded frequency, CTCSS encoded frequency, Forward and Reflected RF power, PA temperature, RSSI, RX and TX VCO volts, Discriminator output audio level and DC supply volts.

• **WIDE BANDWIDTH**

Exceptional frequency coverage between 30MHz and 870MHz complements the wide RF switching bandwidth.

• **CROSSBANDING**

Its functionally independent transmit and receive signals allow users the flexibility of transmitting on one band and receiving on another.

• **CONTINUOUS DUTY OPERATIONS**

An automatic PA protection circuit reduces the output power when the transceiver heats up and when a high Voltage Standing Wave Ratio (VSWR) is reached. A thermally-controlled fan lowers the transmission temperature during continuous operations.

• **AUDIO CLARITY**

Ensures clearer transmit and receive signals with low transient noise.

• **COMMUNICATION PRIVACY**

Recognises valid tones and transmits user-associated tones through the optional non-predictive CTCSS and full duplex DCS encoder/decoder.

OPTIONS

- T05 – balanced and isolated VF I/O.
- T13 – local speaker and microphone socket
- T14 – front panel channel change function
- T16 – Simplex changeover relay



FEATURES

	<i>MXD1500 ENHANCED</i>	<i>MXD1500 ECONOMY</i>
INPUT/OUTPUT		
N type TX connector	✓	✓
BNC RX connector	✓	✓
Line I/O connector	✓	✓
3 open collector alarm outputs	✓	✓
Digital I/O	✓	
Monitor connector	✓	
Front panel LED status indicators	✓	
RJ45 optional isolated VF I/O connector	✓	
Bussable RS323 port	✓	
RS232 port at rear	✓	✓
TIMERS		
Programmable TX time out timer	✓	✓
Programmable repeater PTT hang time	✓	✓
Programmable repeater CTCSS hang time	✓	✓
Programmable line PTT hang time	✓	✓
Programmable line CTCSS hang time	✓	✓
CHANNEL SELECTION		
255 Channel capacity	✓	✓
Software channel select	✓	✓
Rear BCD/Binary channel change inputs	✓	✓
Internal DIP switch channel select	✓	
MISCELLANEOUS		
Comprehensive programming software	✓	✓
Serial port diagnostics	✓	✓
Hardware ID assignment	✓	
Temperature controlled fan	✓	✓
Power supply monitor	✓	✓
Remote TTR control	✓	
Morse ID	✓	
Link configurable VF path	✓	
VF I/O and TTR levels trim pot adjustable	✓	
Fixed I/O and internal levels		✓
On board switching for VF path control	✓	
Dip switch mode selection	✓	
Software mode selection		✓
Programmable channel spacing	✓	✓
Programmable CTCSS encoder/decoder	✓	✓

MIL Standard

The MXD1500 Base Station is designed to meet or exceed most requirements for MIL-STD810 C, D and E.

Specifications subject to change without notice and are measured in accordance with EIA standards.



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GENERAL

Frequency Range:	Band A2 to A3: 30-50 MHz Band A to B:66-88 MHz. Band C to Q2: 135-532 MHz. Band R to X: 805-870 MHz
Switching Bandwidth:	10-35 MHz band dependent
Channel Spacing:	34 kHz, 25 kHz or 12.5 kHz
RF Channels:	255
Power Supply:	13.8 VDC +/-20%
Temperature Range:	-10 to +60°C
Duty Cycle:	100% continuous
Dimensions (WxDxH):	483mm x 330mm x 89mm
Weight:	9 kg
Antenna Connection:	TX: N type RX: BNC

RECEIVER

Sensitivity (12db SINAD):	<117 dBm (0.3 µV)
Intermodulation:	>80 dB
Blocking	>100 dB
Frequency Stability:	2.5 PPM, 1.5 PPM or 1 PPM
Disc Output Bandwidth:	DC to 5kHz (25 kHz channel) DC to 3.4 kHz (12.5kHz channel)
Audio Output Bandwidth:	300 Hz to 3 kHz
Audio Output Level:	+6 to -15 dBm @ 600Ω (unbal)
Audio Distortion:	<2%
De-emphasis:	6 dB per octave (+1, -3 dB)
Current Drain Receive	450 mA typical (with TX VCO off)

TRANSMITTER

RF Power 30-520 MHz:	5 to 50 Watts programmable
RF Power 805-870 MHz:	5 to 35 Watts programmable
RF Power 805-870 MHz:	5 to 50 Watts programmable
Frequency Stability:	20 PPM, 2.5 PPM, 1.5 PPM or 1 PPM
TX Spurious:	< -90 dBc
Deviation Limiting:	2.5 kHz / 5 kHz programmable
Data I/P Mod Bandwidth:	DC to 3.4 kHz
Audio Input Bandwidth:	300 Hz to 3 kHz
Audio Input Level:	+6 to -15 dBm @ 600Ω (Unbal)
Audio Distortion:	< 2%
Pre-emphasis:	6 dB per octave (+1, -3dB)
Current Drain Transmit:	<11 A

COMPLIANCE

Minimum design performance to exceed:
 AS4295-1995
 ETS 300 086, Jan 1991
 ETS 300 113
 FCC Part 90
 TIA/EIA-603
 BAPT 225 ZV 1/2098 (German Softkeying)
 CEPT T/R 24-01 E, Sept 1998
 EC Marking, EC EMC Directive 89/336/EEC
 RFS25, 26, 32

One-Year Warranty

Each Motorola radio is backed by a one-year warranty on radio parts and labour.



Accelerated Life Testing
 Motorola's Accelerated Life Testing simulates five years of hard use in real life, EIA RS-316B in Shock, Vibration, Dust, Humidity, IP54 for Sealing.



MIL-STD 810C, D and E
 Stamp of approval from the U.S. Military for use in rough environments.



ISO 9001 Standard
 Compliance with ISO 9001 Standard - an international quality system assurance on design, development, production, installation and servicing of a product.