

# MX800

## APCO P25 DIGITAL BASE STATION/REPEATER

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### MX800 APCO P25 DIGITAL SPECIFICATIONS

#### GENERAL

|                         |  |
|-------------------------|--|
| Frequency Coverage:     | 30-960 MHz.  |
| Band A2 to A3:          | 30-50 MHz (Analog, Digital TBA)  |
| Band A to B:            | 66-88 MHz ( 5PPM or 1PMM opt37)  |
| Band C to Q2:           | 135-532 Mhz (VHF 5PPM, UHF 2.5PPM)   |
| Band R2, R3:            | 746-794 MHz (1PPM)   |
| Band R to X:            | 805-960 MHz (1PPM)   |
| RF Switching B/W:       | Full Sub band.   |
| Dimensions (W x D x H): | 483 mm x 330 mm x 89 mm. (19" x 13" x 3.5")  |
| Weight:                 | 9kg depending on options. (20lbs)  |
| Antenna Connections:    | Rx,Tx both N type Female.<br>(N type Female Simplex relay opt)   |
| Modulation:             | Analog -Direct FM two point method.<br>P25 Digital - Continuous 4 level FM (C4FM)  |
| Channel Spacing:        | Analog- Programmable 25/12.5 kHz.<br>P25 - Digital 12.5kHz.  |
| Synthesizer Step Size:  | 12.5kHz , 10kHz, 6.25kHz or 5kHz.  |
| Channels:               | 100 front panel selectable,<br>255 PC software selectable.   |
| Supply Voltage:         | 13.8 +/- 20% or optional AC mains input.   |
| DC Power Consumption    | T80/T81: <600 mA receive, typ 560mA.<br>T82 <700 mA receive, typ 660mA<br><10A for 50W TX RF, typ 8A.<br><16A for 100W TX RF output. (VHF & UHF) |
| Operating Temperature:  | -30 to +60C (-22° to 140°F),<br>-30 or -40C Conformational test optional.  |
| Physical Size:          | 2RU Height x 19" rack mount.   |
| LED indicators:         | Power, Rx, Tx, CTCSS Tone, Aux,<br>Alarm.<br>6X Indicators for P25 status.   |
| Front panel options:    | Speaker & Microphone accessory socket.   |

#### TRANSMITTER

|                               |  |
|-------------------------------|--|
| RF Power Output:              | 1W to 50W. (100W opt)  |
| Frequency Stability           | 1.5PPM std, UHF. 2.5PPM, VHF 5PPM<br>VHF-Low 20PPM. 800MHz 1.0PPM .<br>(Oven control with option T38.) |
| Analog Audio Response:        | Flat within +1,-3dB across BW.   |
| Analog Audio Bandwidth:       | 300Hz to 3000Hz.   |
| Analog Modulation Distortion: | Less than 2% @ 60% deviation.  |
| Digital Modulation Fidelity:  | Better than 3% (typ 1.5%).   |
| Digital Symbol Deviation:     | 1.8 kHz.   |
| Digital Voice Coder:          | 7200 bps IMBE™ Enhanced<br>Vocoder (opt.T81& T82 only).  |
| Digital Protocol:             | Project 25-CAI, (opt.T82-TIA102-BAHA).   |
| Analog S/N Ratio:             | Better than 50dB, (WB).<br>Better than 45dB, (NB).   |
| Spurii and Harmonics:         | More than 100dB below carrier.   |
| Duty Cycle:                   | 100% for 50W (100W opt) RF output.   |
| RF Rise Time:                 | <4mS with continuous VCO selected,<br><100mS with VCO in cold standby.                                 |

#### RECEIVER

|                           |  |
|---------------------------|--|
| Sensitivity:              | Better than-117dBm for 12dB SINAD,<br>typ -120dBm.<br>P25-Better than-117dBm for 5% BER  |
| Selectivity 135-520MHz:   | More than 82dB for 25kHz adj channel.<br>more than 75dB for 12.5kHz addition<br>channel. |
| Audio Bandwidth:          | 300Hz to 3000Hz (+1,-3dB).   |
| Image Freq Rejection:     | Better than 100dB.   |
| Spurious Response Immu:   | Better than 90dB.  |
| Intermodulation Immunity: | Better than 82dB.  |
| Blocking:                 | Better than 100dB at +/- 1MHz point.   |
| Distortion:               | Less than 2% @ 60% deviation.  |
| S/N Ratio:                | Better than 50dB (WB).<br>Better than 45dB (NB).   |
| Co-Channel Rejection:     | Better than 5dB.   |
| Input Load Impedance:     | 50 Ohms nominal (VSWR <2:1).   |

#### APCO P25 FEATURES

##### P25 REPEATER OPTION BOARD (opt.T80):

Transparent mode:

Repeats Mixed Mode. P25 Digital & Analog transmissions.  
Automatically switch to P25 mode on reception of P25 carrier.  
Passes P25 NAC unchanged.  
Passes P25 private call and group call.  
Passes P25 clear or encrypted.  
Front panel indicators show P25 status.  
Benefits of Digital Audio Performance.  
Design based around proven MX800 architecture.  
RF Specs in Digital mode are the same as Analog mode.  
Flash based software design allows future upgrades for new features.

##### P25 BASE / REPEATER OPTION BOARD (opt. T81):

(Firmware dependant upgrade from T80)

Includes T80 features as standard.

Programmable External PTT mode (P25 or Analog) 7200 bps IMBE™ Enhanced Vocoder (opt.T81/T82 only) P25 Digital audio to speaker & line.  
P25 Digital audio from Mic socket & line.

##### P25 BASE / REPEATER WITH FIXED STATION INTERFACE (FSI) PER P25 STANDARD. (opt. T82):

Same features as T80/T81 option above but with the following added hardware and features;

Ethernet interface with digital audio or digitized analog audio ; DFSI P25 Stream IMBE™ or G711.  
DFSI Analog Stream G711.

Passes through P25 encrypted to Ethernet.  
Ethernet remote diagnostics and remote control (Future).  
Tone Remote Control with E&M, 2 / 4 wire audio interface.  
Conforms to Standards to TIA102-BAHA.

##### P25 BASE / REPEATER WITH FIXED STATION INTERFACE (FSI) AND DATA PACKET REPEAT. (opt. T83):

Same hardware and Features as T82 option above but with the added Data Packet Repeat service.  
This is provided by the Common Air Interface by the transmission and reception of data packets. Example of this use is with subscriber GPS positioning.

##### SUPPLEMENTARY APCO P25 DIGITAL RADIO SPECIFICATIONS

|                                |  |
|--------------------------------|--|
| Conforms to Standards:         | TIA102.  |
| P25 Repeater Throughput Delay: | < 80ms   |
| Frame Re-sync Interval:        | 180 ms.  |
| Signalling Rate:               | 9.6 kbps.                                      |
| Digital ID Capacity:           | 10,000,000 Conventional.                       |
| Digital Network Access Codes:  | 4,096 network site.                            |
| Digital User Group Addresses:  | 4,096 network site.                            |
| P25 User Group Addresses:      | 65,536   |
| Error Correction Techniques:   | Golay, BCH,<br>Reed-Solomon codes,<br>TIA 102. |

##### RX Audio Processing Delay

|              |              |
|--------------|--------------|
| P25 Digital: | TIA 102 CAI. |
| Analog:      | 40ms.        |

(Removes mute/squelch "crash" characteristics.)

DCS / CTCSS full duplex encoder and decoder  
Front Panel adjustable Line I/O levels.  
Front panel RS232 port (in parallel with rear port).



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MEASURED IN ACCORDANCE WITH TIA/EIA-603, TIA 102 /STANDARDS  
DUE TO ONGOING DEVELOPMENT WE RESERVE THE RIGHT TO ALTER  
SPECIFICATIONS WITHOUT NOTICE.

REV.3