

ASTRO[®] XTL[™] 5000

W Series Control Heads



MODEL FEATURES

Frequency Bands

- 136-174 MHz
- 380-470 MHz
- 450-520 MHz
- 764-870 MHz

Power Levels

- 10-50 Watt (136-174 MHz)
- 10-40 Watt (380-470 MHz)
- 10-45 Watt (450-520 MHz)
- 10-35 Watt (764-870 MHz)
- 25-110 Watt (136-174 MHz)
- 25-110 Watt (380-470 MHz)

1000 Channels (Standard)

Dual mode operation (ASTRO Digital and Analog)

9600 and 3600 Baud capable

Project 25 capability on Conventional and Trunking systems

Type II Trunking Only

Project 25 compliance interoperable voice signaling features

Integrated voice and data or RS232 capable

Programming Over Project 25 (POP25)

Over the Air Re-key (OTAR)

Bandwidth Receiver

- 12.5/25/30 kHz (analog) – 136-174 MHz
- 12.5/25 kHz (analog) – 380-470 MHz and 450-520 MHz
- 12.5/20/25 kHz (analog) – 764-870 MHz

12.5 kHz bandwidth receiver (digital)

Emergency button

Dash/Remote mount

Meets Military Specs 810 (C,D, E and F)

Utilizes Windows[®]-based customer programming software

Built in FLASHport[™] support

Optional Keypad microphone

External Speaker

USB/RS232 connectivity

Optional Siren PA

Optional DEK

Upgradable

Encryption Capable:

- Type III (optional)
- Allows for MultiKey for single algorithms ONLY
- Algorithms supported:
 - DVI-XL
 - DVP-XL
 - DES
 - DES-XL
 - DES-OFB
 - AES
 - Advanced Digital Privacy (ADP)

Reuse of most ASTRO/MCS accessories

Motorola's XTL 5000 Project 25 compliant mobile radio is tough and well suited for users in Police, Fire, EMS, State/Local/Federal Government agencies. Taking into consideration your work environment and various job responsibilities, this robust mobile radio will support the type of consistent, high quality communication you need. The XTL 5000 digital mobile radio supports APCO Project 25 and is available in 136-174 MHz,

380-470MHz, 450-520 MHz 764-870 MHz frequency bands and supports the accessories common to the XTL platform.

The XTL 5000 digital mobile radio is specifically designed to meet the needs of your organization. When you want high performance, quality, and reliability in your daily communications, the XTL 5000 digital mobile radio is the radio of choice.

SPECIFICATION SHEET

ASTRO® XTL™ 5000
W Series Control Heads

GENERAL PERFORMANCE SPECIFICATIONS

Frequency range	136-174 MHz; 380-470 MHz 450-520 MHz; 764-870 MHz
Modulation	C4FM of QPSK-C family (Compatible 4-Level Frequency Modulation and Compatible Quadrature Phase Shift Keying)
Protocol	
Project 25-CAI	4.4 kbps IMBE, 2.8 kbps Error Correction Coding, 2.4 kbps Embedded Signaling
Channel Bandwidth	
Analog	12.5/25/30 kHz (136-174 MHz) 12.5/25 kHz (380-470 MHz and 450-520 MHz); 12.5/20/25 kHz (764-870 MHz)
Digital	12.5 kHz

VOICE CODER

Voice Coding Method IMBE (CAI)	Improved Multi Band Excitation (IMBE)
Voice Truncation	None
Frame Re-sync Interval	180 mSec (Clear Digital Mode)
Forward Error Correction	Golay code
Error Mitigation Project 25-CAI (IMBE)	
Dual Level	Level 1: Extrapolates and replaces 20 mSec voice frames that exceed the error correction algorithm tolerance. Level 2: Progressive muting of 20 mSec voice frames that are too severely damaged for Level 1 replacement.
Code Book Structure	APCO Project 25 (IMBE): No code book

SIGNALLING (ASTRO MODE)

Signalling Rate	9.6 kbps
Digital ID Capacity	10,000,000 Conventional / 48,000 Trunking
Digital Network Access Codes	4,096 network site addresses
ASTRO Digital User Group Addresses	4,096 network site addresses
Project 25 – CAI Digital User Group Addresses	65,000 Conventional / 4,094 Trunking
Error Correction Techniques	Golay, BCH, Reed-Solomon codes
Data Access Control	Slotted CSMA: Utilizes infrastructure-sourced data status bits embedded in both voice and data transmissions.

MODEL TYPE	W3	W4	W5	W7	W9
Display	2 Line/14-Characters per line Liquid Crystal Display	1 Line/8-Characters Vacuum Fluorescent Display	1 Line/8-Characters Vacuum Fluorescent Display	1 Line/8-Characters Vacuum Fluorescent Display	1 Line/11-Characters Vacuum Fluorescent Display
Hardware Configuration	Hand Held Control Head Select	Rotary Mode & Volume Select	Electronic Mode & Volume Select	Electronic Mode & Volume Select	Electronic Mode & Volume Select
Numeric Keypad	Yes	No	No	Yes	Yes
Channel Capability	1000	1000	1000	1000	1000
Remote Mount Control					
Head Dimensions (HxWxD)	5.4" x 2.4" x 1.2" * (137.2 x 60.0 x 30.7 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	3.4" x 6.5" x 1.7" (86.4 x 165.0 x 43.2 mm)
Dash Mount Radio	NA	2.0" x 7.1" x 9.1" (50.8 x 180.3 x 231.1 mm)	2.0" x 7.1" x 9.1" (50.8 x 180.3 x 231.1 mm)	2.0" x 7.1" x 9.1" (50.8 x 180.3 x 231.1 mm)	NA
Weight*	6.1 lbs. (2.8 kg)	6.1 lbs. (2.8 kg)	6.1 lbs. (2.8 kg)	6.1 lbs. (2.8 kg)	6.1 lbs. (2.8 kg)

* Measurement shown is without Hang-up Clip. With Hang-up Clip W3 depth increases to 1.4".

** Weight is for Dash Mount configuration. Remote Mount weight represents only transceiver weight

NOTE: Analog specifications measured per TIA/EIA 603. Digital mode specifications measured per TIA/EIA TSB102.CA4B.

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TRANSMITTER						
Frequency	764-776 MHz 794-806 MHz 806-825 MHz 851-870 MHz	380-470 MHz (Range 1) and 450-520 MHz (Range 2)	136-174 MHz			
RF Power	10-30W (764-806 MHz) 10-35W (806-870 MHz)	10-45W (450-500 MHz) 10-40W (500-512 MHz) 10-25W (512-520 MHz)	10-50W or 25-110W			
Max Freq Separation	Full Bandsplit	Ref Above Bandsplit	Full Bandsplit			
Freq Stability Operating Freq Accuracy (-30°C to +60°C; +25°C Ref) - 700/800 & UHF (± 2 ppm (-30°C to +60°C) - VHF	1.5 ppm	2 ppm	2 ppm			
Modulation Limiting						
25/20 kHz, 25 kHz, 25/30 kHz channel	±5 kHz, +/-4 kHz (NPSPAC)	±5 kHz	±5 kHz			
12.5 kHz channel	±2.5 kHz	±2.5 kHz	±2.5 kHz			
Modulation Fidelity (C4FM)						
12.5 kHz digital channel	±2.8 kHz	±2.8 kHz	±2.8 kHz			
Channel Spacing Analog	12.5/20/25 kHz	12.5/25 kHz	12.5/25/30 kHz			
FM Hum and Noise						
20/25 kHz, 25 kHz, 20/25 kHz	40 dB	45 dB	45 dB			
12.5 kHz	34 dB	40 dB	40 dB			
Emissions (GNSS=Global Navigation Satellite System)	Conducted -70 dBc -85 dBc (GNSS)	Radiated -20 dBm -40 dBm (GNSS)	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm
Audio Response (6 dB/Octave Pre-emphasis from 300 to 3000 Hz)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)			
Audio Distortion per EIA	3%	3%	3%			

POWER AND BATTERY DRAIN	
Model Type	136-174 MHz 380-470 MHz 450-520 MHz 764-870 MHz
Minimum RF Power Output	10-50 Watt (136-174 MHz) 10-40 Watt (380-470 MHz) 10-45 Watt (450-520 MHz) 10-35 Watt (764-870 MHz) 25-110 Watt (136-174 MHz) 25-110 Watt (380-470 MHz)
Operation	13.8V DC ±20% Negative Ground
Standby at 13.8V	
136-174 MHz (10-50 Watt)	0.85A
380-470 MHz (10-40 Watt)	0.85A
450-520 MHz (10-45 Watt)	0.85A
764-870 MHz (10-35 Watt)	0.85A
136-174 MHz (25-110 Watt)	0.85A
380-470 MHz (25-110 Watt)	0.85A
Receive at Rate Audio at 13.8V	
136-174 MHz (10-50 Watt)	3.2A
380-470 MHz (10-40 Watt)	3.2A
450-520 MHz (10-45 Watt)	3.2A
764-870 MHz (10-35 Watt)	3.2A
136-174 MHz (25-110 Watt)	3.2A
380-470 MHz (25-110 Watt)	3.2A
Transmit Current (A) at Rated Power (W)	
136-174 MHz (10-50 Watt)	13A (50W), 8A (15W)
380-470 MHz (10-40 Watt)	11A (40W), 8A (15W)
450-520 MHz (10-45 Watt)	11A (45W), 8A (15W)
764-870 MHz (10-35 Watt)	12A (35W), 8A (15W)
136-174 MHz (25-110 Watt)	20A (100W)
380-470 MHz (25-110 Watt)	24A (100W)

FCC TYPE ACCEPTANCE ID		
Band	Output Power	Transmitter Number
136-174 MHz	10-50 W	AZ492FT3806
380-470MHz	10-40 W	AZ492FT4862
450-520 MHz	10-45 W	AZ492FT4867
764-870 MHz	10-35 W	AZ492FT5823
136-174 MHz	25-110 W	AZ492FT3808
380-470 MHz	25-110 W	AZ492FT4870
ENVIRONMENTAL SPECIFICATIONS		
Operating Temperature	-30°C / +60°C	
Storage Temperature	-55°C / +85°C	
International Protection	IP54 certified	

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ASTRO® XTL™ 5000
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RECEIVER					
Frequency	764-776 MHz 851-870 MHz	380-470 MHz (Range 1) and 450-520 MHz (Range 2)	136-174 MHz		
Channel Spacing	12.5 / 20 / 25 kHz	12.5 / 25 kHz	12.5 / 25 / 30 kHz		
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit		
Analog Sensitivity		Pre-amp	Standard	Pre-Amp	Standard
20 dB Quieting	.30 µV	0.25 µV	0.40 µV	0.25 µV	0.40 µV
12 dB SINAD per EIA	.25 µV	0.20 µV	0.30 µV	0.20 µV	0.30 µV
Digital Sensitivity					
1% BER (12.5 kHz channel)	.30 µV	0.25 µV	0.40 µV	0.25 µV	0.40 µV
5% BER (12.5 kHz channel)	.25 µV	0.20 µV	0.30 µV	0.20 µV	0.30 µV
Intermodulation Distortion	80 dB	80 dB	85 dB	80 dB	85 dB
Spurious Response Rejection	90 dB	90 dB	90 dB	90 dB	90 dB
Audio Output Power at 3% distortion (External/Internal Speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)		
Adjacent Channel Rejection Selectivity (12.5 kHz/25 kHz)	65 dB / 80 dB	75 dB / 82 dB	75 dB / 82 dB		
Audio Response (6 dB/Octave De-emphasis from 300 to 3000 Hz)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)		

MILITARY STANDARDS 810 C, D, E, & F

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temperature Storage	501.1	I	501.2	I/A1	501.3	I/A1	501.4	I/Hot
High Temperature Operational	501.1	II	501.2	II/A1	501.3	II/A1	501.4	I/Hot
Low Temperature Storage	502.1	I	502.2	I/C3	502.3	I/C3	502.4	I/C3
Low Temperature Operational	502.1	I	502.2	II/C1	502.3	II/C1	502.4	II/C1
Temperature Shock	503.1	-	503.2	I/A1-C3	503.3	I/A1-C3	503.4	I/Hot-C3
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I
Rain Blowing	506.1	I	506.2	I	506.3	I	506.4	I
Rain Steady	506.1	II	506.2	II	506.3	II	506.4	III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-
Salt Fog	509.1	-	509.2	-	509.3	-	509.4	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I
Blowing Sand			510.2	II	510.3	II	510.4	II
Vibration Minimum Integrity	514.2	VIII/F, Curve-W	514.3	I/10	514.4	I/10	514.5	I/24
Vibration Loose Cargo			514.3	II/3	514.4	II/3	514.5	II/5
Shock Functional	516.2	I	516.3	I	516.4	I	516.5	I
Shock Crash Hazard	516.2	III	516.3	V	516.4	V	516.5	V
Shock Bench Handling	516.2	V	516.3	VI	516.4	VI	516.5	VI



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