ASTRO XTS 5000™
Digital Portable Radio

Specification Sheet

Available in the 700/800 MHz and VHF bands
Trunking standards supported: clear or encrypted APCO P16 and APCO P25
Capable of Smartzone, Smartzone Omnilink, SMARTNET, and Conventional System Configurations and ASTRO 25 Trunked Operation
Narrow and wide bandwidth digital receiver (12.5 kHz / 25 kHz)
High speed and embedded digital signalling (ASTRO & ASTRO 25)
Enhanced audio features
  • High quality, error corrected digital voice
  • Noise Reduction Software
  • Audio Gain Control
Convenience Features
  • Time / Date
  • Caller ID
Ruggedized housing option available in traditional black or public safety yellow
Enhanced encryption capability (optional)
Utilizes Windows-Based Customer Programming Software (CPS)
  • Supports USB and RS-232 communications
  • Built in FLASHport support
  • Meets Applicable Mil Specs 810C, D, E and F
Compatible with most MTS and XTS accessories
Interchangeable display labels

MODEL I:
  • Large PTT button
  • Angled On/Off volume knob
  • Orange emergency button
  • Illuminated 16 position top mounted rotary knob
  • 2 position concentric switch
  • 3 position toggle switch
  • Programmable monitor button
  • 2 programmable side buttons
  • Transmit LED indicator
  • No keypad / No display
  • Up to 48 channels

MODEL II:
  Same as XTS Model I features plus the following:
  • 512 channels
  • Dial from pre-stored lists
  • Programmable soft keys for easy access to radio menu
  • Backlit Keypad
    • 3 soft keys
    • 3 navigation keys
  • Full Bitmap Display
    • 2 lines icons
    • 4 lines w/12 characters per line
    • Status icons including battery and power indicator

MODEL III:
  Same as XTS Model I features plus the following:
  • 512 channels
  • Dial from pre-stored lists
  • Programmable soft keys for easy access to radio menu
  • Backlit Keypad
    • 3 soft keys
    • 3 navigation keys
    • 4 x 3 DTMF
  • Full Bitmap Display
    • 2 lines icons
    • 4 lines w/12 characters per line
    • Status icons including battery and power indicator
**TRANSMITTER**

**Typical Performance Specifications**

<table>
<thead>
<tr>
<th>700/800 MHz</th>
<th>VHF</th>
</tr>
</thead>
</table>

**Frequency Range/Bandsplits**
- 700 MHz: 764-776, 773-776, 803-806, 806-824, 851-870
- 800 MHz: 806-824, 851-870

**Channel Spacing**
- 12.5 / 25 kHz

**Maximum Frequency Separation**
- Full Bandsplit

**Rated RF Output Power Adj**
- 764-806 MHz: 1 to 2.5 W
- 806-870 MHz: 1 to 6 W

**Frequency Stability**
- (–30°C to +60°C; +25°C Ref.)
  - ±0.00015% at 764-806 MHz
  - ±0.00020% at 806-870 MHz

**Modulation Limiting**
- 25 kHz chnl: ±5.0 kHz
- NPSPAC chnl: ±4.0 kHz
- 12.5 kHz chnl: ±2.5 kHz

**Emissions**
- (Conducted & Radiated)
  - –75 dBc

**Audio Response**
- (6 dB/Octave Pre-emphasis from 300 to 3000 Hz)
  - +1, –3 dB

**FM Hum & Noise Radio**
- 25 kHz
  - –45 dB
- 12.5 kHz
  - –40 dB

**Audio Distortion**
- 1.5% at 764-806 MHz
- 1% at 806-870 MHz

* Measured in the analog mode per TIA / EIA 603 under nominal conditions

---

**RECEIVER**

**Typical Performance Specifications**

<table>
<thead>
<tr>
<th>700/800 MHz</th>
<th>VHF</th>
</tr>
</thead>
</table>

**Frequency Range/Bandsplits**
- 700 MHz: 764-776, 773-776, 803-806, 806-824, 851-870

**Channel Spacing**
- 12.5 / 25 kHz

**Maximum Frequency Separation**
- Full Bandsplit

**Audio Output Power at Rated**
- 500 mW

**Frequency Stability**
- (–30°C to +60°C; 25°C Ref.)
  - ±0.00015% at 764-806 MHz
  - ±0.00020% at 806-870 MHz

**Analog Sensitivity**
- 12 dB SINAD
  - 25 kHz chnl: –63 dB
  - 12.5 kHz chnl: –63 dB

**Digital Sensitivity**
- 1% BER
  - 25 kHz chnl: –63 dB
  - 12.5 kHz chnl: –63 dB

**Selectivity**
- 25 kHz chnl: –63 dB
  - 12.5 kHz chnl: –63 dB

**Spurious Rejection**
- –75 dB

**FM Hum and Noise**
- 25 kHz
  - –56 dB
- 12.5 kHz
  - –50 dB

**Audio Distortion**
- 1.5% at 764-806 MHz
- 1% at 806-870 MHz

**RADIO MODELS**

<table>
<thead>
<tr>
<th>Display</th>
<th>Keypad</th>
<th>Channel Capacity</th>
<th>FLASHport Memory</th>
<th>700/800 MHz Band</th>
<th>VHF (136-174 MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model I</td>
<td>None</td>
<td>16/48</td>
<td>8MB</td>
<td>H18UCC9PW5_N</td>
<td>H18KEC9PW5_N</td>
</tr>
<tr>
<td>Model II</td>
<td>2 lines of icons</td>
<td>3x2</td>
<td>512</td>
<td>H18UCF9PW6_N</td>
<td>H18KEF9PW6_N</td>
</tr>
<tr>
<td>Model III</td>
<td>2 lines of icons</td>
<td>3x6</td>
<td>512</td>
<td>H18UCH9PW7_N</td>
<td>H18KEH9PW7_N</td>
</tr>
</tbody>
</table>

**FCC Designation**
- AZ489FT5806

**FCC Emissions Designators**
- 8K10F1E, 28K0F1E, 16K0F3E, 8K10F1D, 11K0F3E

**Power Supply**
- 700/800 MHz: One rechargeable nickel-cadmium, or one optional nickel-metal hydride or lithium ion battery
- VHF: One rechargeable nickel-metal hydride, or one optional nickel cadmium or lithium ion battery

**Dimensions without battery (HxWxL)**
- 6.58” x 2.44” x 1.83”

**Weight without battery**
- 12.62 oz
### BATTERIES FOR ASTRO DIGITAL XTS 5000

<table>
<thead>
<tr>
<th>Battery Capacity / Type</th>
<th>Dimensions (HxWxD)</th>
<th>Weight</th>
<th>Battery Part Numbers</th>
<th>Battery Capacity</th>
<th>Duty Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Capacity NiCD</td>
<td>6.15” x 2.3” x .92”</td>
<td>11.10 oz</td>
<td>NTN8294</td>
<td>1525 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiCD FM</td>
<td>6.15” x 2.3” x .92”</td>
<td>11.10 oz</td>
<td>NTN8295</td>
<td>1525 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiCD Rugged FM</td>
<td>6.15” x 2.3” x .92”</td>
<td>11.10 oz</td>
<td>NTN8297</td>
<td>1525 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiMH</td>
<td>6.15” x 2.3” x .92”</td>
<td>9.53 oz</td>
<td>NTN8923</td>
<td>1800 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiMH FM</td>
<td>6.15” x 2.3” x .92”</td>
<td>9.53 oz</td>
<td>NTN8929</td>
<td>1750 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity Lithium Ion</td>
<td>6.15” x 2.3” x .60”</td>
<td>6.98 oz</td>
<td>NTN8610</td>
<td>1850 mAH</td>
<td>5-5-90 / 8 hr.</td>
</tr>
</tbody>
</table>

### PORTABLE MILITARY STANDARDS 810 C, D, E & F

<table>
<thead>
<tr>
<th>MIL-STD 810C</th>
<th>MIL-STD 810D</th>
<th>MIL-STD 810E</th>
<th>MIL-STD 810F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Pressure</td>
<td>Method</td>
<td>Proc./Cat.</td>
<td>Method</td>
</tr>
<tr>
<td>500.1 I</td>
<td>I</td>
<td>II</td>
<td>500.2 II</td>
</tr>
<tr>
<td>501.1 I, II</td>
<td>I, II</td>
<td>I/A1, II/A1</td>
<td>501.2 I/A1</td>
</tr>
<tr>
<td>Low Temperature</td>
<td>Method</td>
<td>Proc./Cat.</td>
<td>Method</td>
</tr>
<tr>
<td>502.1 I</td>
<td>I</td>
<td>I/C3, II/C1</td>
<td>502.2 I/C3</td>
</tr>
<tr>
<td>Temperature Shock</td>
<td>Method</td>
<td>Proc./Cat.</td>
<td>Method</td>
</tr>
<tr>
<td>503.1 –</td>
<td>–</td>
<td>I/A1C3</td>
<td>503.2 I/A1C3</td>
</tr>
<tr>
<td>Solar Radiation</td>
<td>Method</td>
<td>Proc./Cat.</td>
<td>Method</td>
</tr>
<tr>
<td>505.1 II</td>
<td>I</td>
<td>I</td>
<td>505.2 I</td>
</tr>
<tr>
<td>Rain</td>
<td>506.1 I, II</td>
<td>I, II</td>
<td>506.2 I, II</td>
</tr>
<tr>
<td>Humidity</td>
<td>507.1 II</td>
<td>II</td>
<td>507.2 II</td>
</tr>
<tr>
<td>Salt Fog</td>
<td>509.1 –</td>
<td>509.2 –</td>
<td>509.3 –</td>
</tr>
<tr>
<td>Blowing Dust</td>
<td>510.1 I</td>
<td>I</td>
<td>510.2 I</td>
</tr>
<tr>
<td>Immersion*</td>
<td>512.1 I</td>
<td>I</td>
<td>512.2 I</td>
</tr>
<tr>
<td>Vibration</td>
<td>514.2 I/VIII/F, Curve-W</td>
<td>514.3 I/10, II/3</td>
<td>514.4 I/10, II/3</td>
</tr>
<tr>
<td>Shock</td>
<td>516.2 I, II</td>
<td>I, IV</td>
<td>516.3 I, IV</td>
</tr>
</tbody>
</table>

### ENCRYPTION

- **Supported Encryption Algorithms**: AES, DES-XL and DES-OFB, DVP-XL, DVI-XL
- **Encryption Algorithm Capacity**: 8
- **Encryption Keys per Radio**: 48 common Key Reference (CKR) Encryption Keys
- **Encryption Frame Re-sync Interval**: P25 CAI 360 msec
- **Encryption Keying**: Key Loader
- **Synchronization**: CFB – Cipher Feedback
- **Vector Generator**: National Institute of Standards and Technology (NIST) approved random number generator
- **Encryption Type**: Digital
- **Key Storage**: Tamper protected volatile or non volatile memory
- **Key Erasure**: Keyboard command and tamper detection
- **Standards**: FIPS 46-2, FIPS 81, FIPS 140-1 Level 1

### ENVIRONMENTAL SPECIFICATIONS

- **Operating Temperature**: -30°C / +60°C
- **Storage Temperature**: -40°C / +85°C
- **Humidity**: Per MIL-STD
- **ESD**: IEC 801-2KV
- **Water & Dust Intrusion**: IP54, IPX7*, MIL-STD

### RUGGED OPTION SPECIFICATIONS

- **Leakage (immersion)**: MIL-STD-810 C, D, E, F Method 512.X Procedure I: IPX7*

* For rugged models only.
**Specification Sheet**

**ASTRO XTS 2500™ Digital Portable Radio**

**Trunking standards supported**
- APCO Project 16 (3600 control channel)
  or
- APCO Project 25 (9600 control channel)

**System configurations**
- ASTRO® Analog and Digital Trunking with Mutual Aid
  or
- ASTRO® 25 Digital Trunking with Mutual Aid

**Narrow and wide bandwith digital receiver**
(12.5 kHz, 20 kHz, 25 kHz)

**High speed and embedded digital signalling (ASTRO)**

**Enhanced Audio Features**
- High quality, error corrected digital voice
- Noise Reduction Software
- Audio Gain Control

**Convenience Features**
- Time / Date
- Caller ID

**Utilizes Windows-Based Customer Programming Software (CPS)**
- Supports USB and RS-232 communications
- Built in FLASHport support

**Meets Mil Specs 810 C, D, E and F**

**Compatible with most MTS and XTS accessories**

---

**MODEL I:**
- PTT button
- On/Off volume knob
- Programmable orange emergency button
- 16-position top mounted rotary knob
- 3 position concentric switch
- Programmable monitor button
- 2 programmable side buttons
- Transmit LED indicator
- No keypad / No display
- Up to 48 channels

**MODEL II:**
- Same as XTS Model I features plus the following:
  - 160 channels
  - Dial from pre-stored lists
  - Programmable soft keys for easy access to radio menu
  - Backlit Keypad
    - 3 soft keys
    - 3 navigation keys
  - Large Bitmap Display
    - 2 lines icons
    - 4 lines with 12 characters per line
    - Status icons including battery and received signal strength indicator
  - 700/800 MHz band
  - Narrow and wide bandwith digital receiver (12.5 kHz, 20 kHz, 25 kHz)
  - High speed and embedded digital signalling (ASTRO)
  - Enhanced Audio Features
    - High quality, error corrected digital voice
    - Noise Reduction Software
    - Audio Gain Control
  - Convenience Features
    - Time / Date
    - Caller ID
  - Utilizes Windows-Based Customer Programming Software (CPS)
    - Supports USB and RS-232 communications
    - Built in FLASHport support
  - Meets Mil Specs 810 C, D, E and F
  - Compatible with most MTS and XTS accessories

**MODEL III:**
- Same as XTS Model I features plus the following:
  - 160 channels
  - Dial from pre-stored lists
  - Programmable soft keys for easy access to radio menu
  - Backlit Keypad
    - 3 soft keys
    - 3 navigation keys
  - Large Bitmap Display
    - 2 lines icons
    - 4 lines with 12 characters per line
    - Status icons including battery and received signal strength indicator
**TRANSMITTER**

**Typical Performance Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>700 MHz: 764-776, 773-797, 803-806</td>
</tr>
<tr>
<td>Note: Radio covers entire 700 MHz and 800 MHz frequency ranges.</td>
<td></td>
</tr>
<tr>
<td>Channel Spacing</td>
<td>12.5 / 20 / 25 kHz</td>
</tr>
<tr>
<td>Maximum Frequency Separation</td>
<td>Full Band</td>
</tr>
<tr>
<td>Rated RF Output Power Adj*</td>
<td>764-806 MHz: 1 to 2.5 W</td>
</tr>
<tr>
<td></td>
<td>806-870 MHz: 1 to 3 W</td>
</tr>
<tr>
<td>Frequency Stability*</td>
<td>±0.00015%</td>
</tr>
<tr>
<td>(–30°C to +60°C; +25°C Ref.)</td>
<td></td>
</tr>
<tr>
<td>Modulation Limiting*:</td>
<td>±5.0 kHz</td>
</tr>
<tr>
<td>NPSPAC chnl</td>
<td>±4.0 kHz</td>
</tr>
<tr>
<td>12.5 kHz chnl</td>
<td>±2.5 kHz</td>
</tr>
<tr>
<td>Emissions* (Conducted &amp; Radiated)</td>
<td>−75 dBc</td>
</tr>
<tr>
<td>Audio Response* (6 dB/Octave Pre-emphasis from 300 to 3000 Hz)</td>
<td>+1, −3 dB</td>
</tr>
<tr>
<td>FM Hum &amp; Noise Radio*</td>
<td>−43 dB</td>
</tr>
<tr>
<td>25 kHz</td>
<td>−40 dB</td>
</tr>
<tr>
<td>Audio Distortion*</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

* Measured in the analog mode per TIA / EIA 603

**RECEIVER**

**Typical Performance Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>700 MHz: 764-767, 773-776</td>
</tr>
<tr>
<td>Note: Radio covers entire 700 MHz and 800 MHz frequency ranges.</td>
<td></td>
</tr>
<tr>
<td>Channel Spacing</td>
<td>12.5 / 20 / 25 kHz</td>
</tr>
<tr>
<td>Maximum Frequency Separation</td>
<td>Full Band</td>
</tr>
<tr>
<td>Audio Output Power at Rated**</td>
<td>500 mW</td>
</tr>
<tr>
<td>Frequency Stability*</td>
<td>±0.00015%</td>
</tr>
<tr>
<td>(−30°C to +60°C; 25°C Ref.)</td>
<td></td>
</tr>
<tr>
<td>Analog Sensitivity*</td>
<td>12 dB SINAD</td>
</tr>
<tr>
<td>Digital Sensitivity**</td>
<td>.25 μV</td>
</tr>
<tr>
<td>1% BER</td>
<td>.40 μV</td>
</tr>
<tr>
<td>5% BER</td>
<td>.25 μV</td>
</tr>
<tr>
<td>Selectivity*</td>
<td>−72 dB</td>
</tr>
<tr>
<td>25 kHz chnl</td>
<td>−63 dB</td>
</tr>
<tr>
<td>12.5 kHz chnl</td>
<td>−74 dB</td>
</tr>
<tr>
<td>Intermodulation*</td>
<td>−75 dB</td>
</tr>
<tr>
<td>Spurious Rejection*</td>
<td></td>
</tr>
<tr>
<td>FM Hum and Noise*</td>
<td>−47 dB</td>
</tr>
<tr>
<td>25 kHz</td>
<td>−40 dB</td>
</tr>
<tr>
<td>Audio Distortion*</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

**RADIO MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Display</th>
<th>Keypad</th>
<th>Channel Capacity</th>
<th>FLASHport Memory</th>
<th>700/800 MHz Band (764-870 MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model I</td>
<td>None</td>
<td>None</td>
<td>16/48</td>
<td>4MB</td>
<td>H46UCC9PW5_N</td>
</tr>
<tr>
<td>Model II</td>
<td>2 lines of icons</td>
<td>3x2</td>
<td>160</td>
<td>4MB</td>
<td>H46UCF9PW6_N</td>
</tr>
<tr>
<td>Model III</td>
<td>2 lines of icons</td>
<td>3x6</td>
<td>160</td>
<td>4MB</td>
<td>H46UCH9PW7_N</td>
</tr>
</tbody>
</table>

**Specifications subject to change without notice.**
### Batteries for Astro Digital XTS 2500

<table>
<thead>
<tr>
<th>Battery Capacity / Type</th>
<th>Dimensions (HxWxD)</th>
<th>Weight</th>
<th>Battery Part Numbers</th>
<th>mAH</th>
<th>Duty Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Capacity NiCD</td>
<td>4.86” x 2.37” x .968”</td>
<td>8.85 oz</td>
<td>NTN9815</td>
<td>1525</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiCD FM</td>
<td>4.86” x 2.37” x .968”</td>
<td>8.85 oz</td>
<td>NTN9816</td>
<td>1525</td>
<td>5-5-90 / 8 hr.</td>
</tr>
<tr>
<td>High Capacity NiMH</td>
<td>4.86” x 2.37” x .968”</td>
<td>9.63 oz</td>
<td>NTN9858</td>
<td>1800</td>
<td>5-5-90 / 9 hr.</td>
</tr>
<tr>
<td>High Capacity NiMH FM</td>
<td>4.86” x 2.37” x .968”</td>
<td>9.63 oz</td>
<td>NTN9857</td>
<td>1750</td>
<td>5-5-90 / 8 hr.</td>
</tr>
</tbody>
</table>

### Portable Military Standards 810 C, D, E & F

<table>
<thead>
<tr>
<th>Method</th>
<th>Proc./Cat.</th>
<th>Method</th>
<th>Proc./Cat.</th>
<th>Method</th>
<th>Proc./Cat.</th>
<th>Method</th>
<th>Proc./Cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Pressure</td>
<td>500.1 I</td>
<td>500.2 II</td>
<td>500.3 II</td>
<td>500.4 II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High temperature</td>
<td>501.1 I, II</td>
<td>501.2 I/A1, II/A1</td>
<td>501.3 I/A1, II/A1</td>
<td>501.4 I/Hot, II/Hot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Temperature</td>
<td>502.1 I</td>
<td>502.2 I/C3, II/C1</td>
<td>502.3 I/C3, II/C1</td>
<td>502.4 I/C3, II/C1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Shock</td>
<td>503.1 I*</td>
<td>503.2 I/A1C3</td>
<td>503.3 I/A1C3</td>
<td>503.4 I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar Radiation</td>
<td>505.1 II</td>
<td>505.2 I</td>
<td>505.3 I</td>
<td>505.4 I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain</td>
<td>506.1 I, II</td>
<td>506.2 I, II</td>
<td>506.3 I, II</td>
<td>506.4 I, III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>507.1 II</td>
<td>507.2 II</td>
<td>507.3 II</td>
<td>507.4 I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt Fog</td>
<td>509.1 I*</td>
<td>509.2 I*</td>
<td>509.3 I*</td>
<td>509.4 I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blowing Dust</td>
<td>510.1 I</td>
<td>510.2 I</td>
<td>510.3 I</td>
<td>510.4 I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>514.2 VIII/F, Curve-W</td>
<td>514.3 I/10, II/3</td>
<td>514.4 I/10, II/3</td>
<td>514.5 I/24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>516.2 I, II</td>
<td>516.3 I, IV</td>
<td>516.4 I/IV</td>
<td>516.5 I, IV</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Military Standards specify a single procedure for this test.

### Environmental Specifications

<table>
<thead>
<tr>
<th>Environmental Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-30°C / +60°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C / +85°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>Per MIL-STD</td>
</tr>
<tr>
<td>ESD</td>
<td>IEC 801-2KV</td>
</tr>
<tr>
<td>Water &amp; Dust Intrusion</td>
<td>IP54, MIL-STD</td>
</tr>
</tbody>
</table>