



# UNITY® XG-100M MOBILE FULL-SPECTRUM MULTIBAND

## EXCEPTIONAL OPERATION FOR CRITICAL COMMUNICATIONS

The Unity XG-100M full-spectrum multiband radio delivers unprecedented interoperability, ease of use, and advanced capabilities. By supporting both digital P25 secure and analog conventional communications across the VHF, UHF, and 700/800 MHz bands in a single radio, first responders can communicate across multiple jurisdictions and agencies operating on multiple frequencies and systems.

### FEATURES

Built-in GPS provides user geographical location effortlessly at no additional cost.

Designed to scan continuously across all bands, voice modes, and encryption types, the XG-100M provides users exceptional capability and interoperability in a rugged radio.

The mobile supports Harris' EDACS® and ProVoice™ 800 MHz trunking and the receipt of Low Band VHF (30-50 MHz) frequencies.

An optional vehicular repeater is available to extend network connectivity for portable radios and provide added user safety.

### NEXT GENERATION USER INTERFACE

The user-centric design of the XG-100M with CH-100 control unit offers significant capability and flexibility beyond push-to-talk.

- Large full-color display with resistive touch control
- Intuitive menu-driven graphical user interface
- Menu color coding to assist user operation
- Large knobs and buttons
- Front-panel programming

### RUGGED FOR FIELD USE

The XG-100M is built to provide reliable and dependable communications in mission-critical conditions. The mobile exceeds MIL-STD-810G standards for durability.

### FUTURE READY

The XG-100M is a safe investment that agencies can rely on as transitions occur to P25 technology. The radio supports wide-band and narrowband channels (per applicable regulatory standards), and its software-defined architecture allows field upgrading to operating modes such as P25 Phase 2 trunking.

### BEST-IN-CLASS AUDIO

Using the CH-100, the XG-100M features Harris' proprietary noise suppression capability to provide clear and crisp audio. Combining robust audio components and an AMBE+2™ vocoder, this radio provides best-in-class audio in extreme noise and harsh environments.

## GENERAL SPECIFICATIONS

### Dimensions (H x W x D)

#### Radio Only (50W):

2.0 x 6.9 x 9.7 in. (50 x 175 x 247 mm)

#### Radio and CH-721 Control Unit (Includes Knobs):

2.4 x 6.9 x 12.8 in. (60 x 175 x 325 mm)

#### CH-721 Control Unit (Remote):

2.4 x 7.0 x 4.0 in. (60 x 175 x 100 mm)

#### Radio and CH-100 Control Unit (Includes Knobs):

3.3 x 7.0 x 11.6 in. (84 x 178 x 295 mm)

#### CH-100 Control Unit (Remote):

3.3 x 7.0 x 2.8 in. (84 x 178 x 71 mm)

### Weight

#### Front Mount Radio with CH-100:

6.45 lb (2.93 kg)

#### Front Mount Radio with CH-721:

5.9 lb (2.68 kg)

#### CH-100 Control Unit (Remote Mount):

1.20 lb (0.54 kg)

#### CH-721 Control Unit (Remote Mount) :

1.25 lb (0.57 kg)

#### Remote Mount Radio:

5.25 lb (2.38 kg)

### Channel/Talkgroup Capacity

**CH-100:** 12,500 (1,250 per mission plan)

**CH-721:** 1,250

### Speaker

External, 15W

### Control Unit Options

**CH-100:** Touchscreen, 16-bit color, 480 pixels x 272 pixels, 4.3 in. sunlight readable LCD

**CH-721:** System and Scan models available, 3-line 12-character alphanumeric display

**HHC-731:** Ruggedized and compact design, provides CH-721 features, 3-line 12-character alphanumeric display

### Environmental Specifications

**Relative Humidity:** Per MIL-STD-810G

|                                   | °F          | °C         |
|-----------------------------------|-------------|------------|
| <b>Ambient Temperature Range:</b> | -22 to +140 | -30 to +60 |

|                              | Feet   | Meters |
|------------------------------|--------|--------|
| <b>Altitude Operational:</b> | 15,000 | 4,572  |
| <b>In-Transit:</b>           | 40,000 | 12,192 |

### Electrical

**System Voltage:** 10.8 to 16.6 VDC Negative Ground

## TRANSMITTER

### Typical Performance Specifications

Frequency Range (MHz):

Rated RF Power (W):

Rated RF Power Talkaround (W):

Frequency Stability (-30 to +60°C) (ppm):

Modulation Limiting (kHz):

Audio Response (dB):

Spurious and Harmonics (dBc):

FM Hum and Noise @ 25 kHz (dB):

@ 12.5 kHz (dB):

Audio Distortion (%):

Project 25 Modulation Fidelity (%):

Project 25 Adjacent Channel Power (dBc):

Emission Designators:

### Full-Spectrum Multiband\*

136-174 (VHF), 380-520 (UHF), 762-870 (700/800)

VHF: 5-50, UHF: 5-50, 700: 2-30, 800: 2-35

VHF: 5-50, UHF: 5-50, 700: 2-30, 800: 2-35

±0.5

2.5, 4, 5 (FM)

+1/-3

-70, FCC Part 90

VHF-low: 48.2, VHF: 48.8, UHF: 48.6, 700/800: 48.0

VHF-low: 47.1, VHF: 45.9, UHF: 46.2, 700/800: 44.4

<1.0

<1.00

>70

8K40F1D, 8K40F1E, 8K10DXW, 11K0F3E, 11K9F1D, 11K9F1E, 12K0G7D, 12K0G7E,

14K0F3E, 14K2F1D, 14K2F1E, 16K0F3E

\*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

## REGULATORY DATA

| Frequency Range (MHz) | RF Output (W) | Frequency Stability (ppm) | FCC Type Acceptance Number | Applicable FCC Rules | Industry Canada Certification Number | Applicable Industry Canada Rules | NTIA Certification Number |
|-----------------------|---------------|---------------------------|----------------------------|----------------------|--------------------------------------|----------------------------------|---------------------------|
| 30-50                 | 0.009         | 0.5                       | AZQ-XG-100M00              | 90                   | 122D-XG100M00                        | RSS-119                          | NA                        |
| 136-174               | 50            | 0.5                       | AZQ-XG-100M00              | 22, 80, 90           | 122D-XG100M00                        | RSS-119                          | J/F 12/9952               |
| 156-162               | 50            | 0.5                       | AZQ-XG-100M00              | 22, 80               | 122D-XG100M00                        | RSS-119                          | J/F 12/9952               |
| 380-520               | 50            | 0.5                       | AZQ-XG-100M00              | 22, 90               | 122D-XG100M00                        | RSS-119                          | J/F 12/9952               |
| 763-775, 793-805      | 30            | 0.5                       | AZQ-XG-100M00              | 90                   | 122D-XG100M00                        | RSS-119                          | NA                        |
| 806-824, 851-869      | 35            | 0.5                       | AZQ-XG-100M00              | 90                   | 122D-XG100M00                        | RSS-119                          | NA                        |

Technical specifications are subject to change without notice. Product sales are subject to applicable U.S. export control laws.



## RECEIVER

### Typical Performance Specifications

|                                                 |                                                                  |
|-------------------------------------------------|------------------------------------------------------------------|
| Frequency Range (MHz):                          | 30-50 (VHF low), 136-174 (VHF), 380-520 (UHF), 762-870 (700/800) |
| Channel Spacing (kHz):                          | 12.5, 20, 25                                                     |
| Sensitivity (12 dB SINAD) (dBm):                | VHF-low: 121.5, VHF: 122.1, UHF: 121.8, 700/800: 121.2           |
| P25 Reference Sensitivity (5% BER) (dBm):       | VHF-low: 121.5, VHF: 122.1, UHF: 121.8, 700/800: 121.2           |
| Adjacent Channel Rejection @ 25 kHz (dB):       | VHF-low: 80.6, VHF: 82.5, UHF: 77.4, 700/800: 77.0               |
| P25 Adjacent Channel Rejection @ 12.5 kHz (dB): | VHF: 63.9, UHF: 62.9, 700/800: 61.9                              |
| Intermodulation (dB):                           | VHF-low: 81.9, VHF: 81.9, UHF: 81.8, 700/800: 82.5               |
| Spurious and Image Rejection (dB):              | VHF-low: 86.6, VHF: 83.0, UHF: 92.4, 700/800: 94.4               |
| FM Hum and Noise @ 25 kHz (dB):                 | VHF-low: 49.5, VHF: 54.8, UHF: 48.2, 700/800: 52.0               |
| @ 12.5 kHz (dB):                                | VHF-low: 46.6, VHF: 54.6, UHF: 45.0 700/800: 44.9                |
| Rated Speaker Audio Output Power (W):           | 15W RMS into 4 ohm                                               |
| Audio Distortion (%):                           | <1.0 @ rated power                                               |

\*VHF and UHF product is compliant with applicable FCC narrowbanding mandate below 512 MHz.

## ENVIRONMENTAL STANDARDS

| Standard      | Parameter                        | Methods              | Procedures/Categories |
|---------------|----------------------------------|----------------------|-----------------------|
| MIL-STD-810G* | Low Pressure                     | 500.5                | 1,2                   |
|               | High Temperature                 | 501.5                | 1,2                   |
|               | Low Temperature                  | 502.5                | 1,2                   |
|               | Temperature Shock                | 503.5                | 1-B                   |
|               | Solar Radiation                  | 505.5                | 2                     |
|               | Blowing Rain**                   | 506.5                | 1                     |
|               | Humidity                         | 507.5                | 2                     |
|               | Salt Fog                         | 509.5                | 1                     |
|               | Blowing Dust                     | 510.5                | 1                     |
|               | Vibration (Basic Transportation) | 514.6                | 1, Category 4         |
|               | Vibration (Minimum Integrity)    | 514.6                | 1, Category 24        |
|               | Shock (Functional/Basic)         | 516.6                | 1                     |
|               | Shock (Transit Drop)             | 516.6                | 4                     |
|               | U.S. Forest Service              | Vibration (10-60 Hz) | Paragraph 2.15        |
| IEC 60529     | Dust-tight and water jets        | IP65**               |                       |

\*Also meets equivalent superseded MIL-STD-810D, -E, and -F.

\*\*CH-100 and CH-721 control units meet IP65/MIL-STD-810, XG-100M radio unit meets IP54.

## DIGITAL OPERATION

### Protocol P25

|                        |                                                                    |
|------------------------|--------------------------------------------------------------------|
| Vocoding Method:       | AMBE + 2™ Enhanced Full Rate & Enhanced Half Rate                  |
| Signaling Rate (kbps): | 9.6                                                                |
| Modulation:            | Phase1 TX: C4FM, RX: C4FM & WCQPSK<br>Phase 2 TX: HCPM, RX: WCQPSK |

## ENCRYPTION

|                        |                                                                            |
|------------------------|----------------------------------------------------------------------------|
| Encryption Algorithms: | AES (FIPS-140-2 certified), DES-OFB, DES-CFB, Encryption Lite (40-bit)*    |
| Encryption Keys:       | 128 keys (64 AES, 64 DES)                                                  |
| Encryption Keying:     | Harris Keyloader, P25 Conventional and Trunked OTAR, KVL-3000+ with CH-100 |

\*Option included as standard with the radio. Interoperates with commonly available ARC4 encryption algorithms.

## ADVANCED FEATURES

The XG-100M delivers the advanced features required by critical communication users.

- **Multiple Mixed Systems Zones** – allows users to communicate across multiple types of systems, whether Analog Conventional, P25 Conventional, P25 Trunked Phase 1 (FDMA) or Phase 2 (TDMA). Zones composed of multiple systems are created and users can assign knob positions to channels and talkgroups on these disparate systems.
- **Command Tactical Zone (CTZ)** – allows users to dynamically create custom zones to communicate with other jurisdictions without a need for PC-enabled programming. Custom zones provide up to 48 additional channel assignments.
- **GPS Tracking** – provides quick and accurate unit location information to dispatchers via the radio network.

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## ACCESSORIES

The Unity XG-100M offers a full complement of accessories that operate under the extreme conditions experienced by first responders. Several control units are shown below.

### Control Units

The XG-100M offers multiple control units to meet special requirements. All are available in front or remote mount designs.

The CH-100 control unit incorporates a large 4.3-inch touchscreen color display that includes a powerful graphical user interface and a built-in microphone that works with the hand held microphone to support noise suppression. Wireless audio accessories for the CH-100 are supported by Bluetooth® technology. For security purposes, pairing management is controlled from the radio interface, and Bluetooth can be disabled, if desired.

The CH-721 control unit is a more traditional unit with a 3-line 12-character alphanumeric display. The control unit is available in Scan (limited keypad) and System (full keypad) models and supports 800 MHz EDACS and ProVoice trunking operation. The Scan model has large selection buttons. The System model has a 12-button keypad to allow advanced operations without a DTMF microphone.

The HHC-731 Hand Held Controller provides the advanced features of the CH-721 System control unit, including siren and light bar control, in a compact package. The ruggedized design meets a full range of environmental specifications and supports 800 MHz EDACS and ProVoice trunking operation. The 3-line 12-character alphanumeric display is backlit for use in low-light areas. The small size of the HHC-731 makes it ideal for covert operations and use in space-constrained environments.



CH-100



CH-721 Scan



CH-721 System



HHC-731

### Additional Accessories Available

Antennas, microphones, desktop control station, vehicular repeater, PC programming software, and cables are available.

### About Harris Corporation

Harris Corporation is a leading technology innovator that creates mission-critical solutions that connect, inform and protect the world. The company's advanced technology provides information and insight to customers operating in demanding environments from ocean to orbit and everywhere in between. Harris has approximately \$8 billion in annual revenue and supports customers in 125 countries through four customer-focused business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

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