



XM Radio Control Head

XMC100

User Manual

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SIGNATURES ON FILE



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INTRODUCTION

1. Scope

- A. This user manual contains a general product overview, description of operation, list of user interface features, and instructions for the XM Radio Control Head, hereinafter referred to as the Control Head.
- B. The Control Head and associated XM Radio System is manufactured by Heads Up Technologies.

2. Product Support Services

Technical Support and Installation Manuals for the Control Head are available from:

Heads Up Technologies, Inc.
2033 Chennault, Suite 100
Carrollton, TX 75006-5097
Telephone: 972.980-4890
FAX: 972.980-4843
<http://www.heads-up.com>

3. Usage Guide

- A. This user manual is written to Air Transportation Association (ATA) Specification 100 format requirements. Refer to Table of Contents for a listing of manual content. User manual section content is outlined below:
 - (1) INTRODUCTION A general introduction to the XM Radio System and Control Head. Subjects covered are: Scope, Product Support Services, Usage Guide, Advisories, Revision Service, Abbreviations and Notes Page.
 - (2) OVERVIEW & FEATURES A brief overview of the XM Radio System and Control Head, its general purpose/application, and display/control features.
 - (3) CONTROL HEAD OPERATION A description of provided Control Head information and user interface controls.
- B. WARNINGS - CAUTIONS- NOTES

WARNINGS are provided before potentially dangerous procedures, materials, methods, and processes, which must be followed precisely to avoid injury.

CAUTIONS are provided before procedures, materials, methods, and processes, which must be followed precisely to avoid equipment damage.

NOTES are provided after applicable procedural steps, when necessary, to highlight or clarify information.

4. Definitions

The following definitions apply to the XM Radio System and Control Head:

BUTTON An input device used to control system operation.

CHANNEL Selectable individual XM Radio channels sometimes referred to as radio stations.

KEY A LCD touch-screen input device used for controlling system operation.

PROGRAM CATEGORIES Selectable groups of similar stations or channels which are programmed together. Examples of program categories are “Country”, “Jazz” and “News”.

5. Advisories

CAUTION: TURN OFF POWER BEFORE DISCONNECTING ANY SYSTEM COMPONENT OR INTERCONNECTING WIRING. DISCONNECTING THE COMPONENT WITHOUT TURNING POWER OFF MAY CAUSE VOLTAGE TRANSIENTS THAT CAN DAMAGE THE COMPONENTS.



CAUTION: ESD DEVICES ARE SUBJECT TO DAMAGE BY EXCESSIVE LEVELS OF VOLTAGE AND/OR CURRENT, JUST AS ARE MORE CONVENTIONAL SEMICONDUCTOR DEVICES. HOWEVER, THE PRECAUTIONS NORMALLY USED TO PROTECT SEMICONDUCTORS ARE NOT SUFFICIENT FOR THE PROTECTION OF ESD DEVICES BECAUSE OF THEIR VERY HIGH ELECTRICAL RESISTANCE. THE LOW-ENERGY SOURCE THAT MOST COMMONLY DESTROYS ESD DEVICES IS THE HUMAN BODY WHICH, IN CONJUNCTION WITH NONCONDUCTIVE GARMENTS AND FLOOR COVERINGS, GENERATES AND RETAINS STATIC ELECTRICITY. IN ORDER TO ADEQUATELY PROTECT ESD SENSITIVE COMPONENTS, THE COMPONENT AND EVERYTHING THAT CONTACTS IT MUST BE BROUGHT TO GROUND POTENTIAL BY PROVIDING A CONDUCTIVE SURFACE AND DISCHARGE PATHS. THE FOLLOWING PRECAUTIONS MUST BE FOLLOWED:

- A. DE-ENERGIZE OR DISCONNECT ALL POWER AND SIGNAL SOURCES AND LOADS.
- B. PLACE THE COMPONENT ON GROUNDED CONDUCTIVE SURFACE.
- C. GROUND THE INSTALLATION OPERATOR THROUGH A CONDUCTIVE WRIST STRAP OR OTHER DEVICE USING A 470-KILOHM OR 1-MEGHOM SERIES RESISTOR TO PROTECT THE OPERATOR.
- D. DO NOT HANDLE ESD DEVICES UNNECESSARILY OR REMOVE THEM FROM THEIR PACKAGES UNTIL ACTUALLY USED OR TESTED.
- E. TO PREVENT DAMAGE BY TRANSIENT VOLTAGES, ONLY SOLDERING IRONS HAVING ZERO VOLTAGE AT THE TIP SHOULD BE USED.

7. Abbreviations

When applicable, the following abbreviations, acronyms, and symbols are used. Additional abbreviations, acronyms, and symbols may be defined within the manual contents. Standard electronic terms and circuit signal names are not listed.

ESD	Electrostatic Discharge
FAA	Federal Aviation Administration
ATA	Air Transportation Association
EAR	Export Administration Regulation
ITAR	International Traffic in Arms Regulation
LCD	Liquid Crystal Display
HUT	Heads Up Technologies
XMC	HUT XMC100 XM Radio Control Head

8. Notes

This page is provided for recording manual holder's records, application notes and system-related information.



OVERVIEW AND FEATURES

1. Overview

- A. The XMC100 is designed and manufactured specifically for aircraft installation and integration with the Heads Up Technologies XM Radio Receivers and customer supplied cabin entertainment systems.
- B. The XM Radio system is designed to provide digital-quality radio sound and information to existing cabin entertainment systems.
- C. The XMC100, as illustrated in Figure 1., provides system information and operational control capability of the XM Radio system.

2. System Features

- A. The XM Radio system receives XM radio signals transmitted from two geosynchronous XM broadcast satellites.
- B. The XM radio receiver processes signals and provides digital quality audio to aircraft passengers while traveling coast-to-coast within the contiguous United States of America.
- C. The XM Radio system provides the following features:
 - Digital quality sound
 - Over 170 selectable XM radio stations/channels (subject to change by XM)
 - 1-3 second nominal station access time
 - Programs from world's leading broadcasters and content producers
 - Compatibility with existing audio and entertainment systems
 - Custom program selection for individual passengers

3. Control Head

The XM Radio Control Head is illustrated in Figures 1 and 2.

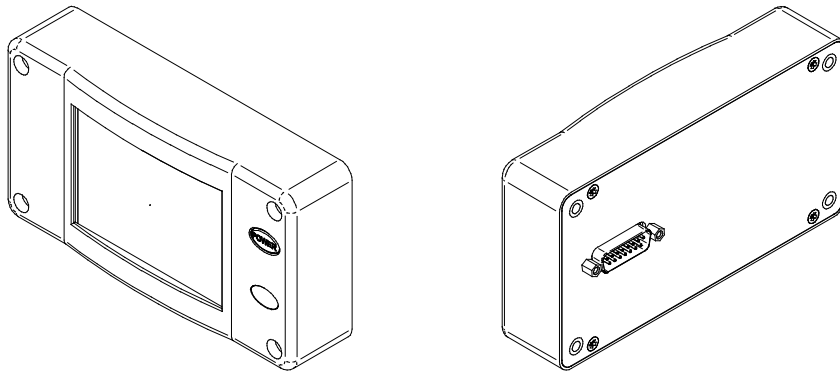


Figure 1. Control Head Outline View

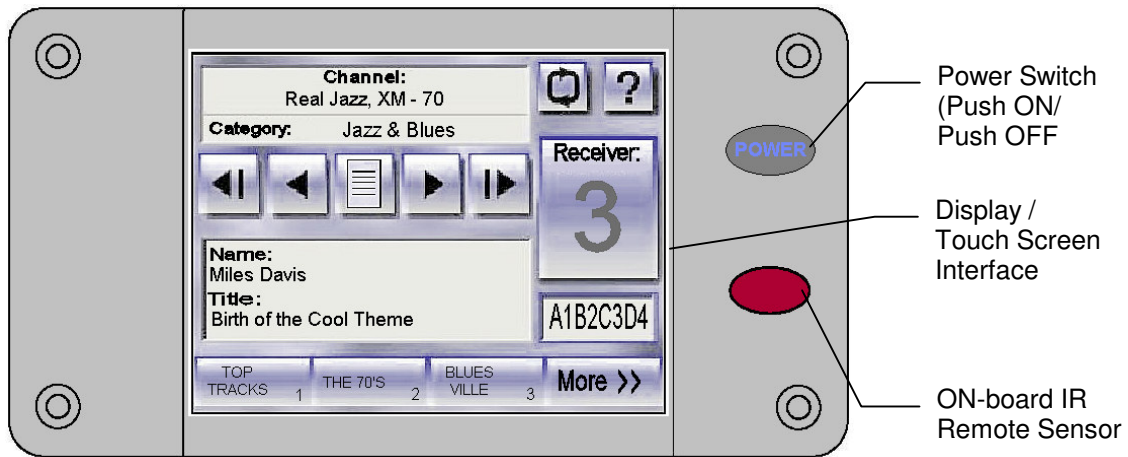


Figure 2- Front Panel Layout

4. Control Head Display

The controller display, illustrated in Figure 3 below, provides information and user interface via an integrated touch-screen overlay.

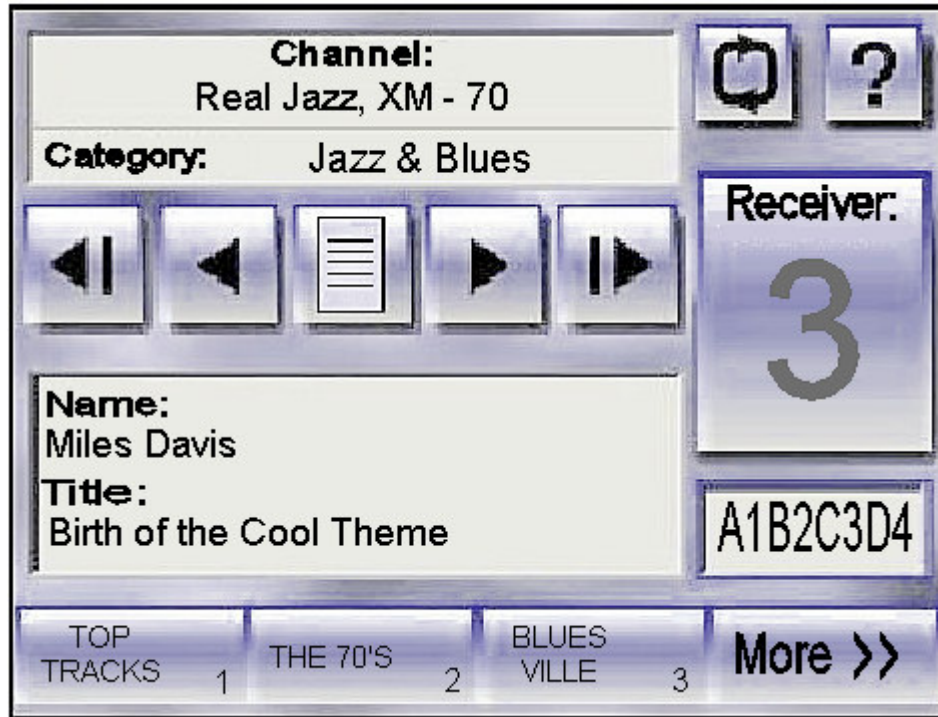


Figure 3. Control Head Display Layout



5. Display and Touch-Screen Controls

The Control Head uses an illuminated touch-sensitive LCD screen for displaying system information and providing user interface control.

The LCD provides the following information:

- Current selected **CHANNEL** name and number
- The **CATEGORY** of the selected channel
- Artist **NAME** or information source
- Music/ song **TITLE** and information
- Selected **RECEIVER** number and Radio ID display
- Selected self-help and system diagnostic information

The LCD also provides touch-sensitive key control of:

- Category/Channel navigation features with quick menu key
- Six channel presets per receiver
- Category locking feature
- Receiver selection (maximum of 16 receivers can be managed from a single XMC100 controller)
- INFO/? Help/Information screen





6. Control Button and Key Functions

A. POWER

The button labeled POWER on the right-hand side of the Control Head is a momentary action switch. Pressing and releasing the POWER button turns the XM Radio system ON and OFF. The button illuminates when the system is ON.

B. CHANNEL & CATEGORY SELECT

Four navigation keys select XM CHANNELS and CATEGORIES:

-  (PREVIOUS CATEGORY)
Press key to go to the first CHANNEL of the previous CATEGORY.
-  (PREVIOUS CHANNEL)
Press key to go to the next lower CHANNEL. If CATEGORY is locked, the system will loop back to the highest CHANNEL in the current CATEGORY.
-  (QUICK MENU)
Press to access the channel menu. Select the desired CATEGORY on the left side and select desired listed channel on the right side.
-  (FORWARD)
Press key to go to the next higher CHANNEL. If CATEGORY is locked, the system will loop back to the lowest CHANNEL in the current CATEGORY.



- **▶ (NEXT CATEGORY)**
Press key to go the lowest channel of the next program CATEGORY. For example from "Country" to "Dance".
- C. **CHANNEL PRESETS**
Press one of the three keys at the bottom of the display to jump to that preset CHANNEL. Press the MORE>> key to view the next three presets.
- To program a preset, tune to desired CHANNEL, press and hold the desired preset key until a second beep is heard.
- D. **↻ LOCK/LOOP**
Press key to lock the CATEGORY to the one currently being displayed. When locked, the FORWARD and BACK keys will loop within the CATEGORY only.
- E. **RECEIVER**
Press key to go next radio receiver source (for multiple-receiver XM Radio systems). The currently active receiver information will be displayed in the source/status panel as 1 through X (where X is the total number of available receivers).
- F. **? HELP**
Press key to display system information in the source/status panel.
- Press key once to display on-line help screen.
 - Press key again to display signal quality information to access the SETUP menu.
 - Press key a third time to exit to the normal display.
- G. **SETUP**
On the second press of the ? key, the MORE >> key changes to SETUP. When pressed, the following menu choices are available:
- SLEEP – Press to select the desired screen saver timeout
 - REMOTE – Press to toggle if usage of the remote control will cancel the screen saver.
 - VERSION and VOLUME CFG – For installer/maintenance only. Installation manual required for information about these selections.



CONTROL HEAD OPERATION

Operating the XM radio requires the selection of system features via Control Head LCD touch-screen keys. The following steps are required to operate the Control Head:

1. Power Up

ACTION	RESULT
1. Press POWER button	(a) Illuminates POWER button indicating system power is ON. (b) Illuminates LCD, displays key controls and displays information on currently selected XM radio CHANNEL.

2. Select Channels/Categories

ACTION	RESULT
1. Press ► key	Advances to and plays next <u>higher</u> CHANNEL.
2. Press ◀ key	Advances to and plays next <u>lower</u> CHANNEL.
3. Press ☰ key	Access quick channel access menu.
4. Press ◀■ key	Advances to <u>lowest</u> CHANNEL of <u>previous</u> CATEGORY.
5. Press ■► key	Advances to <u>lowest</u> channel of <u>next</u> CATEGORY.

3. Select Channel Presets

ACTION	RESULT
1. Press preset key 1, 2 or 3	Advances to and plays memorized CHANNEL presets.
2. Press MORE>> key	Advances to display CHANNEL preset keys 4, 5 and 6.
3. Press MORE>> key	Returns to display CHANNEL preset keys 1, 2 and 3.



4. Set Channel Presets

ACTION	RESULT
1. Select CHANNEL	Displays and plays current CHANNEL selection to be stored.
2. Press and hold desired preset number (1-3) or (4-6)	Channel is stored when second beep is heard (approximately 2-seconds after pressing key).

5. Lock Receiver in Category

ACTION	RESULT
1. Press LOCK/LOOP key	Locks radio receiver in the currently displayed CATEGORY
2. When locked, press ▶ FORWARD or ◀ BACK key	Loops through and plays CHANNELS within locked CATEGORY

6. Select Radio Receiver Source

ACTION	RESULT
1. Press RECEIVER key	Advances system to the <u>next</u> available XM Radio receiver. (When system has multiple-receivers)
2. Repeatedly press RECEIVER key	(A) Displays receiver number in the source/status panel. (B) Loops through all available radio receivers.

8. Power Down

ACTION	RESULT
1. Press POWER button	Turns XM Radio system OFF. The button illumination will extinguish.