



**Magnum Dynalab MD 609T
XM Satellite Radio**

INSTRUCTION MANUAL

TABLE OF CONTENTS

INTRODUCING XM SATELLITE RADIO	3
How to Subscribe	3
THE MD-609T – INTRODUCTION	4
Product Overview	4
FRONT PANEL DISPLAY	6
REAR PANEL FEATURES	7
MD-609T REMOTE CONTROL FEATURES	8
XM ANTENNA PLACEMENT	9
LCD DISPLAY FEATURES	10
TUNER CONFIGURATION & OPERATION	11
XM Satellite Radio Activation	11
Tuning XM Channels	11
Programming & Recalling XM Preset Channels	11
RS232 PROTOCOL	12
RS-232 Commands & Syntax	13
ERROR MESSAGES	14
TROUBLESHOOTING	15
SPECIFICATIONS	16
LIMITED WARRANTY	17
IMPORTANT SAFETY INSTRUCTIONS	18

INTRODUCING XM SATELLITE RADIO

It's a new vision of distributed audio. XM Satellite radio features a stirring collection of channels with Jazz, Classical, Rock and a variety of other music stations, plus news, sports, comedy, talk and entertainment, all with coverage across Continental North America.

Questions? Visit www.magnumdynamalab.com/xmradio-faq.htm or www.xmradio.com in the USA or www.xmradio.ca in Canada.

How to Subscribe

When you first unpack your *MD-609T*, you can listen to your device by tuning to the XM Preview station, but to unlock its full station assortment, you will have to subscribe to the XM Radio service. To do so, visit XM on the Web at www.xmradio.com in the USA or www.xmradio.ca in Canada or by calling XM's Listener Care at 1-800-XM-RADIO (1-800-967-2346). Customers should have their Radio ID ready; the Radio ID can be found by selecting channel 0 on the *MD-609T*.

A Warning Against Reverse Engineering:

Technology. It is prohibited to copy, decompile, disassemble, reverse engineer, or manipulate any technology incorporated in receivers compatible with the XM Satellite Radio system. Furthermore, the AMBE (R) voice compression software included in this product is protected by intellectual property rights including patent rights, copyrights, and trade secrets of Digital Voice Systems, Inc. The user of this or any other software contained in an XM Radio is explicitly prohibited from attempting to copy, decompile, reverse engineer, or disassemble the object code, or in any other way convert the object code into human-readable form. The software is licensed solely for use within this product.

THE MD-609T – INTRODUCTION

Welcome to Magnum Dynalab and congratulations on your purchase of the *MD-609T* XM Satellite Radio.

Magnum Dynalab has been designing and manufacturing high-performance audio equipment for over 20 years. Our commitment to our customers has been to use only the world's finest components, to consistently deliver outstanding build quality, and to provide exceptional customer service, whether your product has been in use for one month, one year or over a decade.

The *MD-609T* includes the high-performance analog circuitry our customers have come to expect from us, and in addition, the device is XM Ready, only requiring a quick activation to receive over 170 XM stations in the USA and over 110 stations in Canada.

The *MD-609T* has an IR input, enabling control and complete functionality of the device with a remote from a pragmatic range. The front panel controls also allow selection of XM Categories and Channels, with an option to load up to 20 preset stations.

The easy to read blue backlit LCD front panel display shows XM metadata for channel, category, artist and track along with satellite signal strength. This special LCD screen has been selected for its long-life, and the mellow mood-lighting it bestows during listening sessions.

The rear panel features an XM antenna terminal, plus IR and RS232 inputs for control of the device from whole-house systems, making the *MD-609T* an incredibly versatile device. We hope you enjoy your purchase.

Product Overview

- Access to over 170 XM radio channels in the USA, and up to 110 XM radio channels in Canada, all 100% commercial free.
- XM Category Search, 20 XM radio station presets, and bright 4.2" blue LED screen showcasing all relevant music metadata.
- Unique 4 tube audio stage featuring our MD Triode Reference 6922 vacuum tubes.
- Our *Triode Reference Audio Control Center (TRACC)* analog circuitry...the most advanced we have ever developed.
- RS232 port and supporting protocols enabling control of the MD 609T from just about any hard-wired device capable of outputting RS232 commands.

- Torroidal transformer employed to provide a pure, consistent power supply to all components.
- Both single-ended and balanced analog outputs.
- 19" faceplate with precision machined buttons ensuring responsive sensitivity.
- External IR remote with complete functionality.
- Future upgrade possibilities: The digital satellite receiver has been designed in such a way to be replaceable according to any changes to the way in which satellite radio technology evolves over time.



Figure 1. MD-609T Front Panel Features

MD-606T FRONT PANEL FEATURES

1. **Power On/Off Switch** – Press to turn the MD-609T on/off.
2. **CAT-/+ Buttons** – Press to search different music categories (Jazz, Classical etc..). Upon finding the category to which you would like to listen, press **Select** on the front panel to change the channel to that station.
3. **CH -/+ Buttons** – Press Ch- to tune the previous channel (down the station list), and press Ch+ to tune the next channel (up the station list).
4. **Menu Button** – Used to determine Radio ID. NOTE: If the Menu Button is pressed, press 1 on the handheld remote to determine Radio ID, press 2 on the handheld remote to return to regular operation.
5. **Select Button** – Press to select a channel previewed with the Cat -/+ Buttons.
6. **IR Sensor** – Positioned on the right-hand side of the faceplate, the infrared eye 'sees' the IR commands from a MD-609T remote or another properly programmed controller for remote control of the device.

REAR PANEL FEATURES

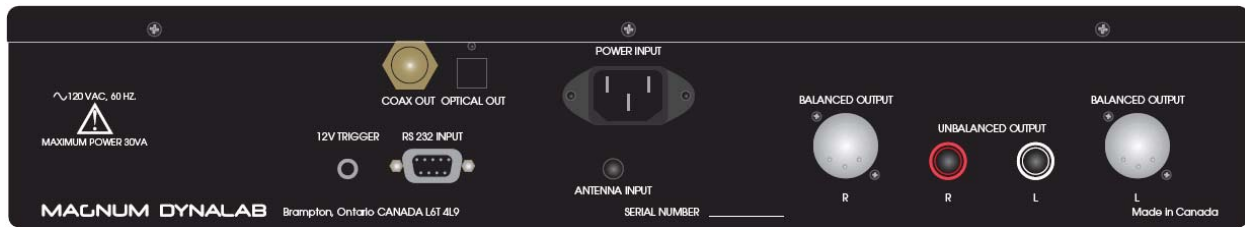


Figure 2. MD-609T Rear Panel Features

MD-609T REAR PANEL FEATURES

1. **12V Trigger** – Used in selected home automation systems for control of the device.
2. **RS-232 Serial Port** – One DB9 connector provides two-way RS-232 communication with like featured control systems. Pinout: Pin 2 = Tx; Pin 3 = Rx; Pin 5 = ground.
3. **COAX OUT** – Digital output of a S/PDIF signal to external DAC via a coaxial cable.
4. **OPTICAL OUT** – Digital output of a S/PDIF signal to external DAC via a TOSlink optical cable.
5. **AC Power** – Standard IEC 3-conductor line cord receptacle.
6. **XM Antenna** – One mini pin SMB connector connects to the included XM indoor antenna.
7. **Unbalanced (Single-ended) analog outputs** – Two RCA-type jacks output L & R channels line level audio from the MD-609T for connection to a stereo preamp or another controlling device.
8. **Balanced analog outputs** – Two 3-pin XLR connectors output L & R channels from the MD-609T for connection to a stereo preamp or another controlling device.

MD-609T REMOTE CONTROL FEATURES



Figure 3. MD-609T Remote Control Features

1. **Numeric Buttons** – Press to enter a three digit number to call up specific stations (in 'D' tuning mode), or to select stored preset stations (after selecting 'A' or 'B' preset bank). Preset programming and selection is described in a subsequent section.
2. **XM Button** – Not used for regular operation.
3. **Presets (A, B and D (direct) Buttons)** – Press to select 'A' or 'B' bank of presets, then press the Numeric buttons to call up your preset stations, or press and hold one of the Numeric buttons to store the currently tuned channel to a preset location. Select 'D' for direct tuning with a three digit entry of the Numeric Buttons followed by a press of the Select Button. 'A', 'B' and 'D' status is displayed in the lower left corner of the Display. Up to 20 Preset stations are programmable (10 in bank 'A', 10 in bank 'B').
4. **Power On/Off Switch** – Press to turn MD-609T ON/OFF. NOTE: The remote will only put the MD-609T into Standby Mode. To completely shut-down the device (and turn off the LCD screen), the front panel Power button must be used. It is recommended that you completely shut-down the MD-609T when a long time period is expected between listening sessions.

5. **CH -/+ Buttons** – Press Chan – to tune the previous channel (down the XM dial), and press Chan + to tune the next channel (up the XM dial).
6. **CAT-/+ Buttons** – Press to search different categories of XM programming. Press the Select button to tune to the previewed channel on the LCD screen.
7. **Select Button** – Press to select a channel previewed with the CAT -/+ buttons or the Browse button.
8. **Browse** – With a channel tuned, press to preview other XM channels without changing the currently selected channel. To select the previewed channel, press the SEL Button.

XM ANTENNA PLACEMENT



Figure 4. XM Antenna

XM Antenna Instructions

1. Use the included XM antenna. Connect to the XM Antenna Terminal prior to powering up the MD-609T.
2. Adjust the XM antenna's position for signal strength. Typically, the antenna should be mounted with an unobstructed southeast facing view. Some directional adjustment may be needed to attain optimum signal strength.
3. To test the XM Satellite Radio prior to activation, tune to Channel 1 (XM Preview). If the Preview Channel plays, the antenna is positioned correctly and the tuner is ready for activation.

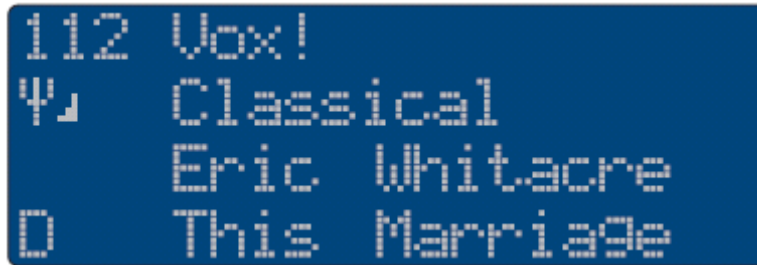


Figure 5. LCD Display

Display Features

1. **Channel** – Displays the XM Channel number and Channel Name of the currently tuned channel, or a Previewed channel using the Category -/+ button or the Browse -/+ button.
2. **XM Antenna Confirm & Signal Strength** – Indicates connection of XM Antenna, and displays the strength of signal being received from the XM Satellite. If four bars are not showing at any time reposition the antenna to improve signal strength.
3. **Preset Station (if applicable)** – If the currently selected channel has been programmed as a Preset, its location ('A1' represents the Preset 1 in bank 'A') is shown.
4. **Preset Status Indicator** – 'A' and 'B' indicate Preset Banks 'A' and 'B'. 'D' indicates Direct Tune Mode.
5. **Category (Genre)** – Displays the genre or type of music or program, (classical, jazz, rock, comedy, talk, traffic, etc) for the currently selected channel. Channels can be selected by genre (rock channels, jazz channels, comedy channels etc) by using the Category -/+ buttons.
6. **Artist** – Displays the Artist Name for the currently playing track, or the artist of a previewed station.
7. **Song Title** – Displays the Song Name of the currently playing Track, or the name of the song playing on the previewed station.

TUNER CONFIGURATION & OPERATION

XM Satellite Radio Activation

The XM Tuner requires subscription service from XM Satellite Radio to be able to receive program. To activate an XM Satellite Radio Subscription, call 1.800.XM-RADIO (1.800.967.2346) or visit www.xmradio.com and have Radio ID ready. To find Radio ID:

1. Press the Chan +/- Buttons to tune Channel 000. The Radio ID will appear on the Display.
2. Press Chan + to tune Channel 001 (XM Preview) until subscription service is activated.

or:

1. Press the Menu Button.
2. Press Numeric Button '1'. The Radio ID will appear on the Display.
3. Press any Numeric Button to return to operational mode.
4. Press Chan +/- to tune Channel 001 (XM Preview) until subscription service is activated.

Tuning XM Channels

1. Press the CAT +/- Buttons to preview XM Categories (genres) such as Rock, Country, Jazz & Blues, Classical, News, Sports, Comedy etc. Press the Select button to tune to the previewed Category.
2. Press the CH +/- Buttons to change XM Channels. As channels are selected, the Channel Number and Name will be displayed on the LCD screen.
3. Press the Browse +/- Buttons to preview XM Channels on the LCD screen. Press the Select button to tune to the previewed Channel

Programming & Recalling XM Preset Channels

1. Tune to the desired XM channel as described in Tuning XM Channels, above.
2. Press the Preset Button to select 'A' or 'B' bank of presets. 'A' and 'B' status is displayed in the lower left corner of the LCD screen.
3. Press and hold one of the Numeric buttons (0-9) to store the currently tuned channel to a preset location. The MD-609T can store up to 20 preset channels, 10 in bank A and 10 in bank B.
4. To recall Preset channels in bank 'A', press Preset 'A' on the remote. The Preset Status Indicator will show 'A' in the lower left corner of the LCD screen. Select the desired Preset using the Numeric Buttons. To recall Preset channels in bank 'B', press Preset 'B' on the remote. The Preset Status Indicator will show 'B' in the lower left corner of the LCD screen. Press the Direct Button to return to direct tuning of the MD-609T.

RS232 PROTOCOL

The *MD-609T* Tuner has an RS-232 port that allows control of the Tuner from a variety of controllers including Whole-House A/V Distribution and Home Automation Systems, or any just about any hard-wired device capable of outputting RS232 commands.

The *MD-609T* Serial Port allows control of all functions including: Power ON/OFF, Channel Selection, Preset selection, Modes and Direct Numeric Tuning.

The Serial Port on the *MD-609T* uses a female DB9 connector wired in a DTE configuration. Tx (transmit) = pin 2, Rx (receive) = pin 3, Ground = pin 5. Communication settings are 9600 baud, 8 bits, no parity, no handshake.

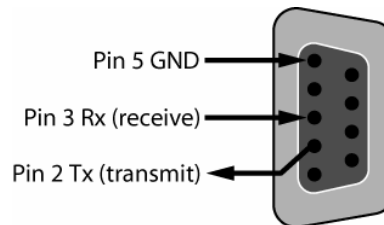


Figure 6: RS-232 Port Pin Out

Baud Rate	Parity	Data Bits	Stop Bits	Flow Control
9600	None	8 bits		None

Each command must be terminated with a carriage return: <cr>. If an invalid command is sent, the *MD-609T* will respond with **ERR**. If a valid command is sent, the *MD-609T* will respond with information. Every response from the *MD-609T* is terminated with CR.

The device sends out unsolicited information whenever it is operated. The syntax is the same as that used for controlling the *MD-609T*. For instance, if someone turns the Tuner ON, the *MD-609T* will transmit "PWR1" out of the serial port. The string will be terminated with <cr>.

RS-232 Commands & Syntax

Command	Syntax	Parameters	Description
Turn Radio ON	PW1<cr>	N/A	Similar to pushing the power button on Front Panel/Remote.
Turn Radio OFF	PW0<cr>	N/A	Similar to pushing the power button on Front Panel/Remote.
Query Radio Power Status	PW?<cr>	PW0=off; PW1=on	Use for if/then power management.
XM Channel Up	CH+<cr>	No reply, unless monitor is turned on, then reply is: (example) "CH? 046 Top Tracks Rock Doors 20 th Century Fox<cr>	Similar to pushing CH+ Button on Front Panel or Remote.
XM Channel Down	CH-<cr>	No reply, unless monitor is turned on, then reply is same as above (different channel).	Similar to pushing CH- Button on Front Panel or Remote.
Query XM Channel	CH?<cr>	Reply is: (example) "CH? 045 XM Cafe Rock Louque Cry Cry<cr>	Use to identify channel.
Direct Select XM Channel	CHxxx<cr>	xxx=Channel. valid range: 001-247	Similar to pressing numeric buttons on Front Panel/Remote.
Query Current XM Channel SID (Station ID)	SID?<cr>	Reply is: (example) SID045	Identifies permanent XM Station ID for currently selected station.
Direct Select XM Channel by SID (Station ID)	SIDxxx<cr>	xxx=SID. valid range: 001-247	Tune XM Channels by permanent SID. Channel numbers may change. SID does not. Eliminates re-programming of channel numbers.
Turn on XM Channel Monitoring	MON1<cr> >	Reply is: (example) "CH? 045 XM Cafe Rock Louque Cry Cry<cr>	Allows display of XM metadata on a display. A new string is sent out every time the song or channel changes.
Turn off XM Channel Monitoring	MON0<cr>	Reply is: MON0<cr>	Turn off display of XM metadata when changing control modes.
Query XM Channel Monitor Mode	MON?	MON0<cr> = monitor off MON1<cr> = monitor on	Use to determine XM monitor mode.
Query XM Radio Serial Number	ID?<cr>	Reply is: (example) MT3LT21RV<cr>	Required for subscription activation.
Recall XM Preset From Bank A	PRAx<cr>	x=0-9. Reply is: (example) "CH? 046 Top Tracks Rock Doors 20 th Century Fox<cr>	Similar to pushing a Preset Button on the Front Panel or Remote.
Recall XM Preset From Bank B	PRBx<cr>	x=0-9. Reply is same as above.	Similar to pushing a Preset Button on the Front Panel or Remote.

ERROR MESSAGES

Error Message	Condition	Solution
CHECK ANTENNA	Problem with antenna connection	a)Check antenna connection b)Check antenna cable for shorts
UPDATING	User encryption code has changed and is being updated	Wait for encryption code to finish updating
NOSIGNAL	Signal is too weak to tune in	Confirm that antenna has not moved or is being obstructed from 'line of sight' to satellite
LOADING	Audio and or text information are being loaded for selected channel	Wait until program information has been received
OFF AIR	Selected channel is not currently broadcasting	Tune to another channel
— or CHANNEL —	Channel SID is no longer available	Tuner will switch automatically to Channel 1, or to the previous channel after 2 seconds
—	Metadata not available for Artist Name/Feature, or Song/Program title	No action required

TROUBLESHOOTING

PROBLEM	SOLUTION
Power	
Tuner will not Power up	<i>MD-609T</i> must be plugged into an AC outlet.
Tuner	
Poor reception	Are antennas connected? Reposition antennas to improve reception.
No stations in presets	Stations must be stored in Presets. See Instruction section: Programming Preset Channels.
Audio	
No Audio From Tuner	Is tuner ON? Is tuner line audio out connected to appropriate source input on Controller or Preamp? Is a proper channel tuned?
RS-232 Control	
<i>MD-609T</i> does not Respond to RS-232 Commands from control device	Is control device ON? Is MD-609T ON? Is control device connected with a DB9 Serial cable? (NOT NULL) Is control device properly configured to send/receive? Are ASCII text commands properly entered in control device? See Instruction section: RS-232 Protocol

XM Module and RS-232 Specifications

Satellite RF Sensitivity: -92.2 dBm

Tuning Range: 2332.5 to 2345.0 MHz

RS-232: DB9F Terminal, 9600 Baud, Asynchronous, 8 Bits, No Parity, No HandshakeNexLink

Audio Specifications

Signal to noise ratio: >110dB

Audio frequency response (+/- .1 dB): 2Hz - 200KHz

Line audio output (RCA): 1.5V

Balanced line out: 3.0V between pin 2 and 3 of XLR

Line power (Must be specified) (110/220/230/240): VAC

Power consumption (Typ/Max) – 50w/100w

Tube Specifications

Total harmonic distortion: <.5%

Tubes position 1 and 2 – MD Triode Reference 6922 CryoValve

Tubes position 3 and 4 – MD Standard 6922

LIMITED WARRANTY

Register your product at www.magnumdynamalab.com

Magnum Dynalab Ltd. herein referred to as the "manufacturer" guarantees this product to be free of defect in both material and workmanship and agrees to remedy any such defect or replace any defective component at no charge for a period of two years from date of sale to the first end user. This warranty is void if the product has been found to be subjected to misuse, abuse, lightning strike, unauthorized service, damaged in transit or has been altered or repaired in such a way as to detract from its performance, reliability or its safe operation. All tubes are covered for 12 months.

Should such defect be discovered and it falls within the terms of this guarantee, the manufacturer will correct the defect in workmanship and/or replace any defective component with a new one of similar capability and value. This warranty does not apply to the cabinet or appearance items such as the faceplate, control knobs or meter lenses nor does it cover any expenses in shipping the unit to the appropriate service depot.

The foregoing is in lieu of any other warranties expressed, implied or statutory and the manufacturer neither assumes nor authorizes any person to assume for it any other obligation or liability in the connection with the sale of this product. This warranty is not transferable except by written authorization from the manufacturer.

In order to qualify under the terms of the above warranty, all items must be returned to the appropriate factory service depot with all shipping charges prepaid in lieu of having previously registered the purchase of the unit by completing and returning the attached Registration Card, the unit must be accompanied by proof from an authorized Magnum Dynalab Ltd. dealer.

YOUR LOCATION	RETURN SHIPPING ADDRESS
Within the USA	Magnum Dynalab c/o Trans American 2775 Broadway, Buffalo, NY, USA 14227-1043 PHONE: 1-800-551-4130
Within Canada	Magnum Dynalab Ltd. 8 Strathearn Avenue, Unit # 9 Brampton, ON, Canada L6T 4L9 PHONE: 1-800-551-4130

TO PREVENT FIRE SHOCK OR HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER OR FACEPLATE, NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

MAGNUM DYNALAB

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage " within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.

To completely disconnect this equipment from the AC mains, disconnect the power supply cord plug from the AC receptacle.

The mains plug of the power supply cord shall remain readily operable.