



Magnum Dynalab MD 109

TRIODE REFERENCE FM TUNER
featuring the
WORLD SOURCE PLATFORM

INSTRUCTION MANUAL

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A Message from the President

Thank you for choosing the Magnum Dynalab *MD 109* Reference FM Tuner complete with our World Source Platform. Great care has been taken in the design, manufacturing and selection of components for the *MD 109* Tuner in order to ensure many years of listening enjoyment.

The MD 109 is the culmination of years of research and development. We have expended considerable effort at every phase of the design process to achieve the highest level of performance. We have used only the finest components throughout the unit, including a separate large torroidal transformer for the audio stage, which incorporates our new **TRACC** technology (Triode Reference Audio Control Center).

We appreciate your decision to purchase the MD 109 FM tuner. Please feel free to contact us if you have any comments or suggestions on improving your FM listening experience. You may call us on our toll free number (1-800-551-4130) or via our direct line when outside North America (1-905-791-5888) or contact us via email at: info@magnumdynalab.com. We at Magnum Dynalab are here to serve your audio source needs.

Respectfully yours,
Larry Zurowski

President

UNPACKING YOUR MD 109

Carefully inspect all sides of the shipping carton for damage. If there are marks or holes in the carton, make note of the location in relation to the unit inside. Any obvious dents or scuffmarks should alert you to the possibility of damage. Open the top flaps and carefully lift the transport case out of the carton. Carefully remove the MD 109 from the box and wrapping, inspect all sides. Pay special attention to the corresponding areas on the unit where damage if any was found on the shipping carton. If damage is evident, document the type and extent of the damage, then repack the unit and call the dealer.

If your unit was delivered by a common carrier (Eg. UPS) and you have found it to be damaged, contact the carrier immediately for instructions.

KINDLY DO NOT SEND THE UNIT BACK TO THE SHIPPER UNTIL YOU HAVE BEEN ASKED TO DO SO. SHIPPING THE UNIT BACK PREMATURELY MAY VOID ANY CLAIM FOR DAMAGE THAT YOU MAY HAVE.

DO NOT DISCARD THE PACKING MATERIALS AND CARTONS. Should you need to return the unit for any reason, it must arrive safely and suitably packaged in order for our receiver to accept it from the carrier. Also, if the unit has incurred damage as a result of improper packaging, it is not likely that a claim for the damage against the carrier will be successful.

Likewise, when applicable we will ship your unit back to you only in factory-approved packaging. However, if the unit were to arrive at our factory in anything other than factory approved packaging, we reserve the right to re-pack the unit in factory-approved packaging and charge the cost of the packaging to the shipper. This is the only way we can assure you of a safe return (damage by carrier excepted).

CONTROL FUNCTIONS

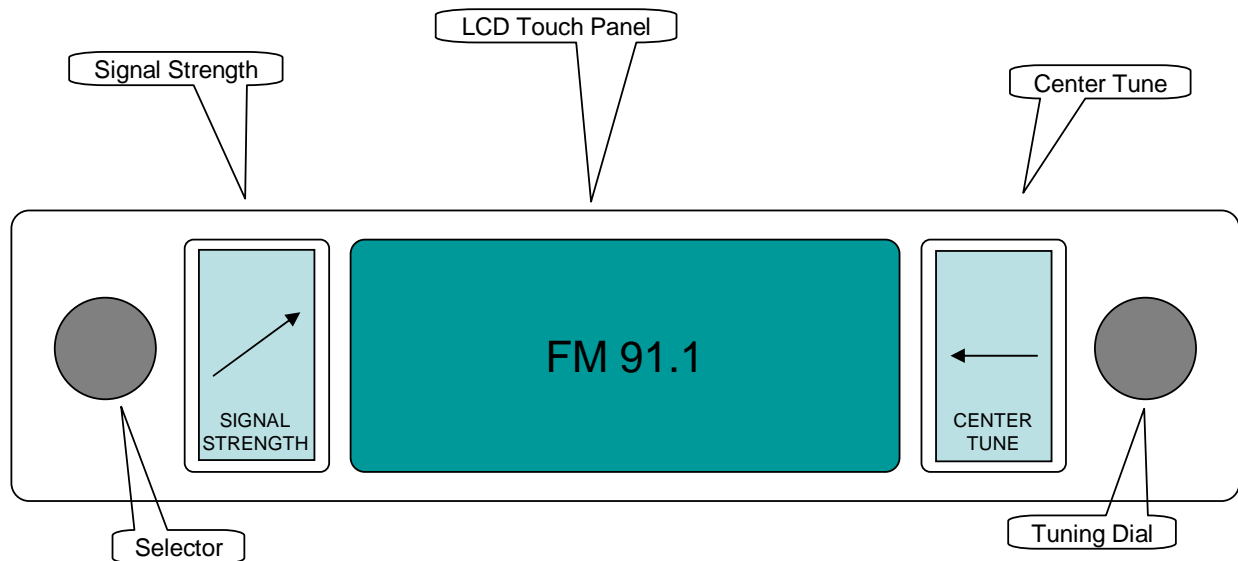
The MD 109 is equipped with an audio sensing circuit, which protects the unit from any unsafe operating conditions. If an unsafe operating situation should occur the unit will automatically be muted, and if the fault lasts more than two minutes a light will flash on the circuit board and the unit will not come back on until serviced

The following functions are displayed clearly on the touch screen. Each function's utility is explained below.

1. **POWER:** Controls the power to all display functions. When in the standby condition the screen will display the Magnum Dynalab logo and the word power in the lower left hand corner.
2. **MUTE:** Controls the elimination of inter-station noise. It is recommended that, when receiving marginal signals, the mute be set to off. This will eliminate intermittent loss of signals that fall below a specific signal value. The word "mute" will appear on the screen when activated.
3. **STEREO:** Controls whether the tuner is operating in Stereo or Mono mode. The word "stereo" will be displayed in the right hand corner of the screen when you are in the stereo mode.
4. **BAND:** This switch controls the IF (intermediate frequency) selectivity. The setting you are on will be displayed in the top right hand corner of the screen. The different settings are described below.
 - a. Super Narrow: Controls the IF super narrow setting. This setting should only be used in extreme reception conditions of adjacent channel problems. The words super narrow will be displayed on the screen when activated with the Band switch.
 - b. Narrow: This setting combines excellent frequency response with high adjacent channel selectivity. The word narrow will be displayed on the screen when activated by the Band switch.
 - c. Wide: Controls the ultra wide IF setting and offers the best frequency response. The word wide will be displayed on the screen when activated by the Band Switch.
5. **DIM:** When activated, the brightness of the screen will be reduced by 50 %; this will extend the life of the screen. The screen will automatically dim after 2 minutes of inactivity.

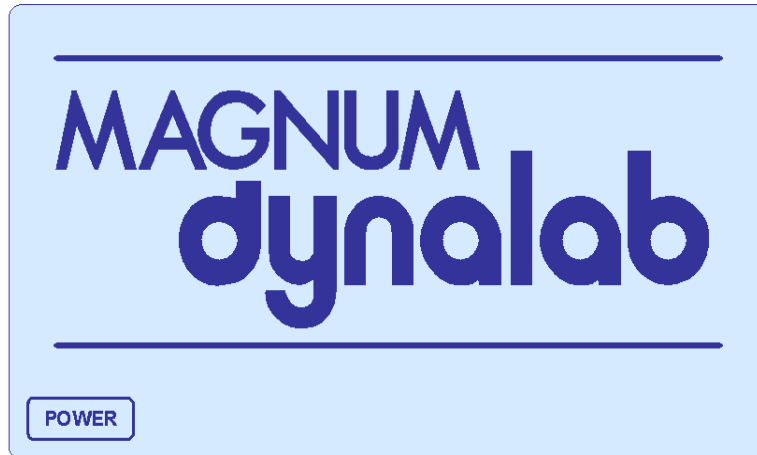
6. **TUNING KNOB:** Rotating this control drives a precision decoder that selects the desired frequency. When fine-tuning manually you must turn the knob slowly as the decoder is very precise.
7. **METER:** The left hand meter displays signal strength. The higher the number the better the performance. The right hand meter displays center tune, optimum operating position will be in the middle.
8. **FREQUENCY DISPLAY:** Displays the frequency that you are tuned to.
9. **SELECTOR KNOB:** this knob selects which mode the MD 109 is operating in. When used as a tuner, FM will be shown on the left side of the screen. When other sources are added to the MD 109, the knob will be turned to activate the input for that source.

IMAGE OF MD-109 FRONT PANEL

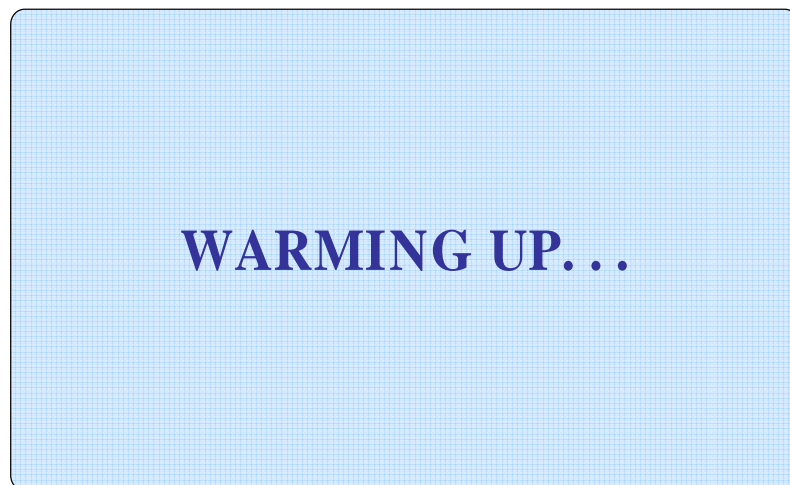


INSTALLING THE MD 109

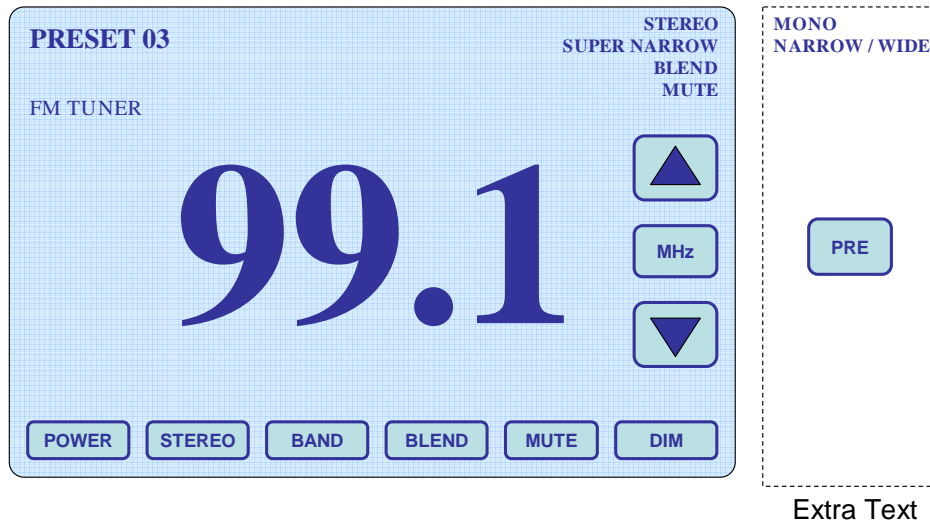
1. Position the tuner the shortest distance from your preamplifier. Avoid putting the unit where there are extremes in temperature.
2. Make sure that the MD 109, with specially designed feet using Vibrapod isolators, is safely positioned on a shelf designed to hold at least 60 pounds (26.55 Kg)
3. Remove the AC cord from the pouch on the lid of the carrying case and plug it into the AC receptacle at the rear of the unit. **DO NOT PLUG THE CORD INTO THE WALL POWER SOURCE AT THIS POINT.**
4. Connect the tuner to your preamplifier using a set of cables consistent with the caliber and type (balanced or unbalanced) of your system. Select the tuner input on your preamplifier. **Note: Be sure that the preamplifier is set to zero.**
5. Connect the FM antenna and/or cable to the RF input on the back of the unit.
6. **CHECK TO MAKE SURE THE UNIT IS SET UP FOR THE PROPER VOLTAGE** (check for unit's voltage marked on rear panel) then plug the tuner's AC power cord into an AC power source. Be sure to use a continuous power source so as to allow the stand-by mode feature to function properly. The tuner's audio output is muted in the stand-by mode.
7. The power switch on the rear of the unit must be put in the **"on"** position
8. When power is supplied the screen will be black. To turn on the touch screen, touch it anywhere on the Magnum Dynalab logo, at which time the **Magnum Dynalab** logo and the word **"power"** will be displayed.



9. To turn on the unit push the power button. At first the screen will display “warming up” as the components are brought up to a safe operating condition. Once the safe operating condition is attained, the screen that is associated with the setting of the input knob will appear. If you are using it in the FM tuner mode, FM will appear on the left side of the screen.
- Note: Each time the tuner is turned “ON”, there is a 25 second delay before the tuner will operate. A light click will be heard, indicating that the relay has been activated and that power is available.**



10. Once power has been initialized, the meters will light and the touch screen will show a reading between 87.5 and 108.5. All control functions will appear on the bottom of the screen and the default positions will show on the top right corner.
- Turn off the *Mute* switch
 - Set the *Band* switch to wide



11. To tune the tuner you have three options:
 - a. Use the tuning knob on the right
 - b. Use the tune up or down arrow with the MHz position displayed on touch screen
 - c. Use the remote control using the tune up and down buttons
12. The tuner is now in a safe operating mode.
13. To turn the MD 109 off push the power button on the screen, the screen will become dark. To turn on the screen, touch the Magnum Dynalab logo or turn the right hand knob.

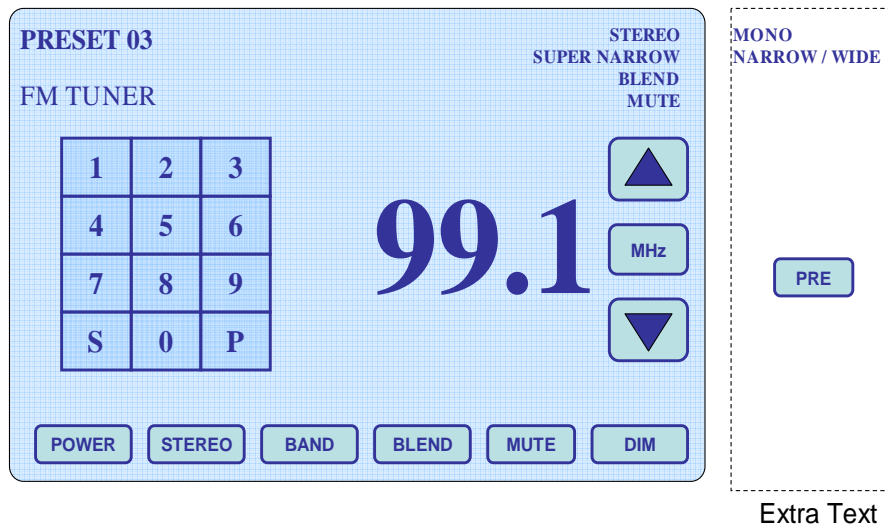
PROGRAMMING THE TOUCH SCREEN

The touch screen is designed to last 10,000 hours. Once the unit has been turned on and the touch screen has been activated it will be at full brightness. After two minutes of inactivity (no touching) the screen will go into a sleep mode, this sleep mode (50 % brightness) will lengthen the life of the screen. To activate the screen touch any point on the Magnum Dynalab logo, use the remote hand held or turn the right hand knob (tuning dial).

Cleaning the touch screen: **Only use a very soft cloth (eyeglass cleaning cloth) with a non-abrasive cleaner.**

SETTING THE FM PRESETS FROM THE TOUCH SCREEN

1. With the screen displaying the FM frequency, touch the digits, a new screen will appear depicting the preset grid.



2. Tune to the station you wish to store, push the **"S"** button on the display and then the preset location, you must use two numbers i.e.: 01. You must also do this fairly quickly to insure storage. Repeat this procedure for up to 40 preset locations.
3. To scan the presets, push the button showing **"MHz"**, it will change to **"pre"** if you push the up arrow above it you will scan your presets going up, by pushing the down button you will view the ones below. To return to **"MHz"**, push the **"pre"** button.
4. To return to the main screen touch any point on the screen.

REAR PANEL

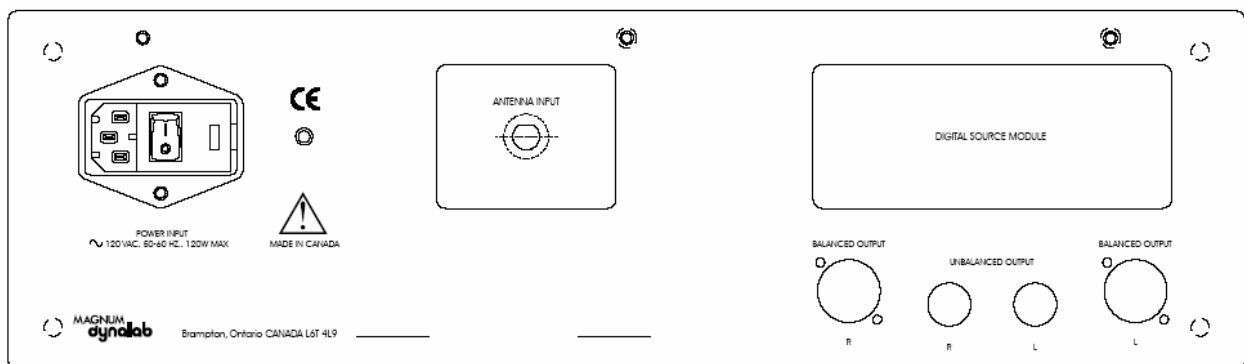
INPUTS: All inputs are electrically isolated from the chassis to insure that the ground plane is not compromised.

The MD 109 is equipped with two module windows, these windows will be replaced if a DAC or an alternative source is added to the MD 109. When another source is added to the unit the software will sense this new device and setup the touch screen accordingly. This new input will be recognized when the left hand knob is set to the input description i.e.: D1, D2, satellite radio or HD radio or whatever future digital sources are connected.

OUTPUTS: The MD 109 uses high grade Neutrix, XLR connectors for *balanced output* in a fully balanced system. *Unbalanced output* is handled using precision manufactured WBT RCA connectors.

POWER INPUT: Plug in the AC cord, insuring that the voltage marked on the rear of the unit is the same as the source AC. This receptacle also holds the external fuse as well as the on/off switch.

ANTENNA INPUT: Hook up the antenna lead to this connection.



Antenna Cabling:

The lead-in cable from the antenna is often the weakest link in the FM system. Some time spent on selection and matching will yield dramatic results when it comes to noise reduction in weak signals.

A good grade of 75-ohm coaxial cable will provide very sufficient signal passage, along with effective shielding against interference. Without effective shielding your coaxial cable can in fact become an antenna in itself. There are different grades of 75-ohm cable, RG59/U (Suitable for 50 feet and less) and RG 6. RG 6 is the better of the two and should be used in runs of 50 feet or more. The RG 6 has quad shielding and 50 % less losses than RG 59/U.

A good type of RG 6 is Beldon 1189 A. Combine this cable with LRC connectors and you will have an installation that will optimize the performance of your tuner.

The key to maximizing the efficiency of the system is insuring that all connections are clean and tight, silicon grease on outdoor connections will insure good performance over a long period of time. If you splice either cable, make sure that exactly the same type of cable is used.

Types of Antennas:

Multi-element Yagi - This is a unidirectional antenna capable of pulling in very distant stations due to its high gain. The higher the gain the better. These types of antennas are directional and should be used with a rotor to get the maximum benefit from the antenna. The directional feature helps eliminate multi-path problems by allowing only the signal from the direction that the antenna is facing to be picked up by the antenna and not the signals that come from different directions.

Magnum Dynalab offers two Yagi antennae, the MD 6 FM or MD 10 FM

Vertical 1/2 Wave - This design offers ease of installation and operation. This type of antenna is omni-directional, which means that it picks up stations coming from all directions. No rotor is required to pull in stations from behind or the side. This design also gathers more of the FM signal from the air, offering superior fidelity over that of a standard bi-directional antenna. It also gives 2.5 dB gain to the signal strength over that of a standard dipole.

If multi-path is a reception problem, try laying the antenna down in the horizontal plane rather than the vertical plane. This type of antenna can be used indoors or

outdoors, but regardless of whether it is installed indoors or outdoors, the higher that you can put it the better it will perform.

Magnum Dynalab offers the MD ST-2, an excellent vertical 1/2 wave antenna

Folded Di-Pole - This is the most common and simplest of all antennas; most people are familiar with the folded di-pole you received with most electronics gear (generally provided with a tuner or receiver). This piece of wire is bi-directional and the performance of it is affected by the angle that the signal hits the piece of wire. There are quite a number of di-pole antenna designs; they work well in areas of strong signal strength.

Magnum Dynalab offers the SR-100 as an excellent, indoor folded di-pole.

There are many styles of antennas but all of them are based on one of these types.

FM RECEPTION AIDS AND ACCESSORIES

We have already alluded to the importance of a good quality antenna which has been designed and built with the reception of the FM bandwidth exclusively.

Should you encounter a situation in which you require more gain to the FM signal or situations where you may need less gain AND better selectivity then the Magnum Dynalab 205 "Signal Sleuth" may be of benefit to you.

The 205 is a FM signal processor/amplifier designed specifically for FM. If you would like more information on this item, please feel free to contact us at any time. Call us TOLL FREE 1-800-551-4130, email us at info@magnumdynalab.com or visit us at www.magnumdynalab.com.

OPERATING THE CONTROL SYSTEM USING THE HANDHELD

1. To turn on the power push the **on** button, to turn the power **off** push the off button
2. To tune up and down push the **tune up** and **tune down** buttons
3. To directly access a station, push the numbers representing the frequency of the station.
4. To store presets:
 - a) Tune the station frequency you want to store, make sure you are tuned perfectly tuned to the station (as indicated by the center tune meter).
 - b) Push store and then the preset location, must be two digits, i.e.: 01
 - c) Repeat steps 1 & 2 for other presets
 - d) To recall a preset, you can push the preset button and the number of the preset you want.
 - e) To reset or purge the presets press “**p**” then “**s**” within 5 seconds.

Problem	Probable Cause	Probable Solution
Presets will not store	Speed of entry of preset position too slow	When entering the preset location do it fairly quickly
Distance that the remote will work is very short	Batteries are weak	Change the batteries Three “AAA”
Tuner will not turn on	AC not connected The infra red sensor is blocked	Check power cord Remove anything sitting in front of the unit

IMAGE OF RC2 REMOTE



TROUBLESHOOTING

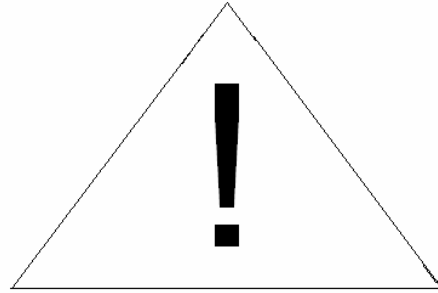
PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
No sound, meter lights are not on	<ul style="list-style-type: none"> • Power cord disconnected • Power off at source • Fuse blown 	<ul style="list-style-type: none"> • Connect power cord • Check AC source • Check fuse in AC input socket
No sound, meter lights are on	<ul style="list-style-type: none"> • Interconnect not properly installed • Preamp set to wrong source • Power amp off • Tube failure 	<ul style="list-style-type: none"> • Check installation of interconnects • Turn preamp to appropriate input • Turn on amp • Replace tubes (6922)
Signal strength is low	<ul style="list-style-type: none"> • Antenna not connected • Wrong type of antenna • Station too far away • Antenna pointed the wrong way 	<ul style="list-style-type: none"> • Check antenna hookup • Check instruction manual for types of antennas • Change your antenna • Rotate the antenna to point at the station
Reception is poor	<ul style="list-style-type: none"> • Antenna not connected • Wrong type of antenna • Cross talk from neighboring stations • Multi-path is occurring 	<ul style="list-style-type: none"> • Check antenna hookup • Check instruction manual for types of antennas • Switch to narrow setting on IF bandwidth • Rotate your antenna, read the <i>Reception Techniques</i> •
Intermittent sound	<ul style="list-style-type: none"> • Mute switch is off 	<ul style="list-style-type: none"> • Turn mute switch on

SPECIFICATIONS

Usable sensitivity- Mono -	0.7 u V 9.0 dBf
50 dB quieting - Mono -	2.0 u V 9.9 dBf
50 dB quieting - Stereo -	2.3 u V 20.0 dBf
Capture ratio -	1.5 dB
Image rejection -	125.0 dB
Signal to noise ratio -	80.0 dB
Alternate channel - Wide -	46.0 dB
Alternate channel - Narrow -	70.0 dB
Alternate channel - Attenuation ~ super narrow -	80.0 dB
Adjacent channel - Wide -	3.0 dB
Adjacent channel - Narrow -	21.0 dB
Adjacent channel - Super Narrow -	48.0 dB
THD - Mono -	0.10 %
THD - Stereo -	0.10 %
Stereo separation -	50.0 dB
AM suppression -	70.0 dB
SCA rejection -	80.0 dB
IF rejection -	80.0 dB
19 KHz and 38 KHz component rejection -	75.0 dB
Audio frequency response	2 Hz to 200 KHz(+0,-0.1 dB)
Balanced audio output (600 ohms) -	2.0 V
Line audio output (RCA) -	1.0 V
Output Impedance	200 ohms (2Hz-200KHz)
Signal to noise ratio	>110 dB
Fuse replacement 115 volts	1 amp
Fuse replacement 230/240 volts	.5 amp
Tube replacement (position 1 & 2)	6922 MD Cryovalve Reference
Tube replacement (position 3 & 4)	6922 MD Reference
Line power (Must be specified) - 110/220/230/240 -	VAC
Dimensions (inches H.W.D.) -	6 x 19 x 16
Dimensions (cm H.W.D.) -	15.24 x 48.3 x 40.7
Weight (lbs./kgs) -	40/17.1
Power consumption (Typ/Max) -	50w/100w

MAGNUM DYNALAB LTD. RESERVES THE RIGHT TO CHANGE OR MODIFY THE SPECIFICATIONS WITHOUT FURTHER NOTICE.

IMPORTANT SAFETY INSTRUCTIONS



1. KEEP THESE INSTRUCTIONS
2. HEED ALL WARNINGS
3. FOLLOW ALL INSTRUCTIONS
4. DO NOT USE THIS APPARATUS IN WATER
5. CLEAN ONLY WITH DRY CLOTH
6. DO NOT BLOCK ANY VENTILATION OPENINGS, INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.
8. DO NOT DEFEAT THE SAFETY PURPOSE OF THE GROUNDING TYPE PLUG. THE GROUNDING PLUG HAS TWO BLADES AND A THIRD GROUNDING PRONG. THE THIRD PRONG IS PROVIDED FOR YOUR SAFETY. IF THE PROVIDED PLUG DOES NOT FIT INTO YOUR OUTLET, CONSULT AN ELECTRICIAN FOR REPLACEMENT OF THE OBSOLETE OUTLET.
9. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES, AND THE POINT WHERE THEY EXIT FROM THE APPARATUS.
10. ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.
11. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.
12. REFER ALL SERVICING TO QUALIFIED PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY, SUCH AS THE 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.
13. THE EQUIPMENT REQUIRES A GROUNDED POWER OUTLET TO OPERATE SAFELY.
14. THE POWER SUPPLY CORD IS THE MAIN DISCONNECT AND SHALL BE READILY OPERABLE.

“WARNING” TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

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
Other Countries	Contact selling dealer

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.