



MAGNUM DYNALAB  
PURE SOURCE AUDIO

# MD 108T

Analog FM Tuner

MD 108 triode

## FEATURES

DUAL MATRIX EYE TUBE TUNING

3 ULTRA SENSITIVE BANDWIDTH SETTINGS

LOW NOISE DUAL GATE MOSFETS

CUSTOM TORROIDAL TRANSFORMERS

6 STAGE TUNING FRONT END

ULTRA-LINEAR POWER SUPPLY

2 ANALOG ANTENNA INPUTS

HAND MATCHED RESONATORS

DAC UPGRADE WITH XM MODULE

The Evolution Of A Classic.

MD 108 Triode FM Tuner

# MD 108T

## HIGHLIGHTS

### DUAL MATRIX EYE TUBE TUNING

Dual MATRIX EYE Tube Tuning: A unique and precise vacuum tube used to ensure that the RF front-end of the device is tuned perfectly for each RF frequency.

### 3 ULTRA-SENSITIVE BANDWIDTH SETTINGS

Three Ultra-Sensitive Bandwidth Settings: Wide, Narrow and Super-Narrow to ensure that the front-end of the tuner is able to collect the ideal amount of RF signal according to the specific listening conditions for each station.

### LOW NOISE DUAL GATE MOSFETS

Transistors in the front-end of the tuner are specially selected to ensure that boosts in gain of the primary signal are not accompanied by a boost in adjacent noise, ensuring a strong signal without interference.

### DUAL CUSTOM TORROIDAL TRANSFORMERS

A secure platform from which to deliver perfect voltages to all components throughout the device via two independent custom transformers.

### 6 STAGE TUNING FRONT END

Six stages of RF filtering to ensure only the purest signal is delivered to the audio stage, all delivered via a custom designed and manufactured RF front end.

### CUSTOM ULTRA-LINEAR POWER SUPPLY

A pure source of DC power throughout the device is of critical importance when supplying current. Our stable power source not only allows the tubes to perform at a consistently high level regardless of the dynamic changes in the music, but is also properly shielded and grounded to eliminate any transient signals.

### 2 ANALOGUE ANTENNA INPUTS

Easy switching between two antennas, which can be placed in different locations throughout the home for maximum signal capture for specific stations.

### HAND MATCHED RESONATORS

For variable bandwidth selections (Wide, Narrow and Super-Narrow), resonators have been hand matched to ensure the signal gain is consistent in all products we build according to our exacting specifications.

### FUTURE UPGRADEABILITY

With an upgrade to include our in-house designed DAC in the MD 108T, the device will act as a source module for any peripheral digital source. At the time of writing, our XM Satellite Radio Tuner is also available as an add-on, giving listeners access to over 170 XM stations in the US, and over 100 stations in Canada.



## EVOLUTION

### The Evolution of a Classic

The predecessor and backbone of the new MD 108T, the MD 108, is one of the most successful standalone FM tuners we have ever introduced. It has been a staple of the Magnum Dynalab collection for over 10 years and the first of our tuners to employ the distinctive and incredibly precise MAGIC EYE tube for tuning, and also the first of our products to utilize a separate audio stage within the unit.

In 2005, our Magnum Dynalab design team took this discrete audio stage to the next level. Our proprietary TRACC technology (Triode Reference Audio Control Center) was introduced first with the launch of the MD 109, and this innovative design has resulted in our most impressive audio output ever. With our most inspiring audio section now available to the market, we felt it appropriate to apply this new technology to some of our classic Analogue FM tuners. Introducing the MD 108T.

In addition to the inclusion of the TRACC audio section (also found in the MD 109), we have also utilized an ultra-stable power supply, a new RF design with greater sensitivity, closer tolerances for the critical components, and a thicker printed circuit board with gold plated solder pads. Finally, a true differentially balanced circuit utilizes the full influence of the Triode tube design and insures that the balanced signals are perfectly matched – thus realizing the full benefit when used in a balanced system.

## RF

### RF Design

Building on the MD 108, the six stage front end is yet another improvement on a proven design. With three ultra-sensitive bandwidth settings and enhanced selectivity, you are ensured the best possible signal from either of the two analog antenna inputs. Plus, the MD 108T is equipped with two digital antenna inputs for future upgradeability. A muting circuit eliminates unwanted inter-station noise, and to provide a visual cue of the devices operation, the MD 108T employs two accurately calibrated taut band analog meters to indicate multipath and signal strength. In unison with these meters, a unique dual MATRIX EYE tube for centre tuning means there is little guess work in optimizing FM reception.

This degree of customization in an FM tuner is only made possible by the fact that we at Magnum Dynalab continue to design and manufacture all of our RF front-ends in-house. Coupled with the impressive collection of critical components used throughout the device, it leads to an impressive list of primary highlights.

## AUDIO

### The Audio Section

With delicate and fastidious detail, our Director of Design Zdenko Zivkovic's purist philosophy has established a truly unique design that realizes zero influence on the original signal. Our major design differentiator is not insignificant... to our knowledge, we are the world's only audio manufacturer to eliminate capacitors after the gain stage of the tubes.



The inclusion of capacitors in any audio stage results in a variable impedance across the frequency range. That is, output impedances can vary anywhere between 10 and 20 times from high to low frequencies, putting additional stress on interconnects, and altering the tonal subtleties of the sound stage across the spectrum. In the MD 108T, direct current from the MD Reference Cryovalve 6922 tubes is delivered without the altering impact of output capacitors, resulting in incredibly low impedance (200 ohms) that is flat across the frequency range (0.2Hz to 200KHz). This flat impedance also eliminates the influence of the interconnects, resulting in a signal that is virtually identical to that which was originally recorded in the studio.

This unique design forms the backbone of our Triode Reference Audio Control Center (TRACC) technology, which is used only in our MD 108T and the MD 109. It is, quite simply, the most accomplished analog audio stage we have ever developed. In addition to its low impedance, it boasts a host of other impressive specifications:

1. Signal to noise ratio > than 110 dB, the micro information from the original signal is maintained.
2. Zero phase shift from 0.2 Hz to 200KHz
3. Zero distortion variance from 0.2 Hz to 200KHz

This demanding level of pristine signal movement requires a solid foundation. Double sided 0.093 thick printed circuit boards provide the base and minimize potentially damaging vibration. With isolation insured, individual components can perform as planned without unbridled influence from neighboring elements and activity. To maximize conductivity and insure that all micro-information is maintained, ceramic tube sockets and all circuit board contacts are generously gold plated.

Without compromise, the MD 108T includes a collection of components supplied by world leaders Mundorf, WBT, Wima, Dale-Vishay and Burr Brown. In the critical areas of the audio board before the tube stage we use the Mundorf Supreme polypropylene dielectric capacitors. Along with their collective ability to move sound while maintaining the purity of the original signal, these components are highly regarded for extensive unwavering performance over the long haul.

To minimize the stress on the tube and insure long tube life a special turn on circuit is incorporated that has a very slow rise time slope. This brings the tube up to the optimum operating current at a very controlled and safe rate. In addition to this notable design feature, our audio tubes themselves are different. Designed and manufactured specifically for Magnum Dynalab, our have been through an exclusive process before landing in the TRACC circuit board. Each tube passes through a series of operations, including a 100 hour cryogenic treatment process at -320oF. This reduces microphonic effects, lowers the dynamic noise floor and increases the 'apparent gain' to greatly relax and improve the dynamic and low level resolving power. Further, the pins have been individually cleaned back to base metal and polished for much improved contact quality and sonics.



The audio stage of the MD 108T is the best we have ever created. A testament to our long-standing experience in the treatment of the analog signal path, the end result is a sound

stage that puts the MD 108T in a class of audio electronics inhabited by very few.

## POWER

### The Power Supply

In nature to our craft and passion, our design team concentrated much of their efforts on the ground plane. By creating a unique grounding loop that eliminates the inherent troubles with chassis grounding, all sources of impurities that originate with the ground plane are eliminated, once again leaving only the purity of the original signal. What characterizes the 108T is how free the sound is of any transients and mysterious high frequency noises. To ensure that the audio signal is unobstructed, all inputs and outputs are isolated from the chassis with a special insulator. To ensure that accurate voltages are supplied to the distinct areas of the tuner, two custom designed Toroidal transformers are employed; one to drive the TRACC audio stage, one to drive the RF and control board.



As you can appreciate, the importance of this stage cannot be understated. It feeds and allows all associated downstream components to perform at their highest level notwithstanding the unpredictable demands placed on it by the dynamics of the music. Throughout the history of high-fidelity innovation, power supply purity and management have proven to be one of the greatest challenges for designers, and the 108T handles this challenge with precision and accuracy.



# SPECS

## 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 – **110.0 dB**  
Alternate channel (Wide) – **46.0 dB**  
Alternate channel (Narrow) – **70.0 dB**  
Alternate channel (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 (+/- 1 dB) – **2 Hz – 200KHz**  
Balanced audio output – **3.0 V**  
Line audio output (RCA) – **1.5 V**  
Line power (Must be specified) (110/220/230/240) – **VAC**  
Dimensions (inches H.W.D.) – **5 x 19 x 16**  
Dimensions (cm H.W.D.) – **12.8 x 48.3 x 40.7**  
Weight (lbs./kgs) – **40/17.1**  
Power consumption (Typ/Max) – **50w/100w**  
Tube Replacement:  
- **#1,2 6922 MD Cryovalve Reference 6922**  
- **#3,4 MD Reference 6922**

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



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PURE SOURCE AUDIO

Magnum Dynalab Ltd.  
8 Strathearn Avenue, Unit 9  
Brampton, Ontario  
Canada  
L6T 4L9

P: 905.791.5888

F: 905.791.5583

TF in North America: 800.551.4130

info@magnumdynalab.com

www.magnumdynalab.com