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MD-1 MIC TO LINE DRIVER / HEADPHONE MONITOR

The Whirlwind MD-1 is the culmination of many years of joint product development between our engineers and suggestions from professionals such as you. This compact portable unit combines a high quality microphone preamp-line driver with a headphone amplifier designed to monitor the mic preamp or be used independently. The MD-1 employs two 9-Volt batteries and provides enough gain to drive both headphones and long signal lines and allow for maximum headroom in the mic preamp.

FEATURES

- Up to 66 dBm of gain adjustable with analog style potentiometer.
- Finest quality mu metal shielded input transformer.
- Wide range frequency response.
- Low input noise and harmonic distortion.
- Low susceptibility to radio frequency interference.
- Balanced, transformer isolated input and output connections.
- Headphone section monitors main input, separate balanced headphone line input or mix of both.
- Rugged construction.
- 9 Volt battery power with reasonable battery life.

CIRCUIT DESCRIPTION

The input is via a female XLR connector with a switch for mic or line level mode. In MIC mode, a mu metal shielded input transformer provides 20dBm of impedance gain with low THD. The MD-1 provides 18VDC phantom power when the MIC/LINE switch is in the MIC mode and the phantom power switch is on. In LINE mode, the audio signal bypasses the transformer and is presented to a standard active balanced input configuration. After the input section, the signal is routed to the active gain circuit.

The active gain section uses a low noise IC to produce up to 26dBm of forward gain. The GAIN control provides both attenuation and gain to the user. With the gain control fully CCW, the circuit provides 50dBm of attenuation (line input mode). With the gain control fully CW (mic mode) the unit will provide 66dB of forward gain from input to output (18dB from the input section, 28dB from the active section and 20dB from the output transformer). After the active gain section, the signal is sent to both the output driver and the headphone amplifier. In the output driver circuit, the signal passes through an IC that buffers the signal, drives the output transformer (which adds 20dBm of impedance gain), provides isolation and helps to maintain maximum common mode rejection. The transformer output is connected to the DRIVER side of the output selector switch. In the

DRIVER position, the output male XLR connector receives the amplified balanced output of the MD-1 circuitry. With the switch in LOOP position the output XLR is connected directly to the female input XLR. This allows the MD-1 to monitor a signal looping through the unit without altering it. In the LOOP mode the MIC/LINE switch and GAIN control only affect the headphone amplifier.

After the gain stage, the signal is also presented to the headphone gain and driver circuits via the MIX control. In full CW position, only the input signal is passed to the headphones. In the full CCW position, only the signal from the 1/4" TRS balanced LINE IN jack is passed to the headphones. Adjusting the MIX control for the desired balance varies the level of each signal in the mix. The blended signal passes through the headphone gain section, which has an audio range of -50dB of attenuation fully CCW to +56 dBm of gain in the full CW position, and then to the headphone driver circuit. The headphone driver will produce -6dB of clean audio into 30Ω headphones, which is quite loud! With higher impedance phones the driver can produce 18 Volts peak to peak. Using 30Ω headphones at very loud levels continuously can consume a set of batteries in about 2 hours. Battery life can be greatly extended simply by turning the headphone volume control to the off or CCW position when not listening to the headphones.

Power to the MD-1 is supplied by two 9 Volt batteries accessible via slide out drawers on the side of the unit. Power is applied to the unit via the power switch. When the battery voltage falls below 13VDC, the BATT OK LED will not illuminate (the unit will still work but with reduced headroom).

The MD-1 is housed in a robust steel case that provides superior shielding and durability. A belt clip is also included and riveted to the enclosure.



CONTROLS AND FUNCTIONS

PH 18V button applies 18VDC phantom power to the input XLR for powering standard condenser microphones. Operates in MIC mode only.

MIC/LINE button matches the input circuit (rear female XLR jack) to either microphone or line level sources. Position is IN for mic mode and OUT for line mode.

GAIN control adjusts the amount of level provided at the rear mounted output male XLR jack. Nominal gain is 40dB in mic mode, with the control set at #6.

Headphone jack accepts 30 Ω to 600 Ω headphones for monitoring signals applied to the headphone amplifier.

PWR button turns the unit on and off.

BATT OK LED illuminates when the unit is turned on and will not illuminate when battery voltage is less than 13VDC.

VOLUME control adjusts the level of the headphones.

MIX control blends the signals from the driver circuit and the LINE IN jack to the headphones.

LINE IN jack accepts balanced or unbalanced TRS line level signal and applies it to the headphones through the mix control for foldback and other applications.

(On rear, not shown)

INPUT jack - female XLR, pin 2 positive. Transformer balanced in MIC mode and active balanced, bridging in LINE mode.

OUTPUT jack - male XLR, pin 2 positive. Transformer balanced in driver mode and hardwired parallel to the input XLR in loop mode.

DRIVER/LOOP button switches the male XLR output between the line driver or loop through modes. Switch position is IN for driver mode and OUT for loop through mode.

SPECIFICATIONS

Equivalent Input Noise	-123dB
Frequency Response	± 3 dBm 6Hz to 25kHz $\pm .1$ dBm 50Hz to 10kHz -2.0dBm at 20kHz
Maximum Input Level	
Line Mode	+18dBm balanced
Mic Mode	-4dBm unbalanced
Input Impedance	
Mic mode	1.5k Ω
Line mode	10k Ω

Maximum Output Level	+12 dBm into a 2k Ω load +24 dBm into a 10 k Ω load +36 dBm into 100k Ω load
Output Impedance	600 Ω
Rise Time	7 μ S
C.M.R. (Common Mode Rejection) of input	>80dBm at 60Hz >60dBm at 60Hz
Line	
THD+n (Total Harmonic Distortion + Noise) Using 200 ohm Input impedance	<.1% 100Hz to 20kHz .4% 20Hz mic mode
2 k ohm output impedance	
40 dB gain mic mode	<.05% 100Hz to 20kHz
0 dB gain line mode	.6% at 20Hz, line mode
Phantom power	+18VDC
Power consumption (two 9-Volt batteries, Duracell MN1604 or equivalent)	25mA DC at idle 41mA DC with 30 Ω headphones at full power 60mA DC maximum
Size	3.88"W by 6.25"L by 2.25"H
Unit Weight	2 lb.
Shipping Weight	3 lb.

WARRANTY:

This product is guaranteed for one year from the date of purchase against manufacturing defects. For warranty service, return the unit postage prepaid along with the original sales receipt to:

Whirlwind
99 Ling Road
Rochester NY 14612

We will, at our option, repair or replace the unit and pay the return postage.

Specifications subject to change without notice.