



Architects and engineers
specifications

M-153

Precision Series
Amplifier Module

Description

The M-153 module is a loudspeaker system-specific signal processor accessory designed for use with the Electro-Voice QRx-153/75 loudspeaker when powered with the Electro-Voice Modular Precision Series P1202 amplifier. The EV QRx153/75 requires biamping and other signal processing to achieve its high level of performance and the M-153 delivers the required signal.

The M-153 module provides optimal, yet cost-effective signal processing consisting of a crossover function with user-selectable high-pass filtering, infrasonic filtering and level balancing between the LF and HF sections.

The QRx153 must be biamped at 500 Hz and the M-153 module provides a 24-dB-per-octave crossover at that frequency. The crossover circuit utilizes a Linkwitz-Riley filter that keeps the LF and HF sections in polarity with each other at the crossover point and has a steep roll-off to prevent out-of-band signals from degrading the system's performance.

Installation and Operation

The M-153 is straightforward to install. First, remove the screws holding the blank cover panel on the left as you face the front of the P1202 amplifier. Then slide the module into the slot A, making sure that it mates securely with the connector inside the amplifier. Use the same screws that held the blank panel to hold the M-153 in the chassis.

The M-153 module automatically routes the appropriate signal to both channels in the amplifier and it is important to remember that the P1202 can only be used with one M-153 module, not more.

Upon insertion into the P1202, channel A powers the LF section and channel B powers the HF section. The HF channel's gain is automatically attenuated by ~6 dB to sonically balance the two sections of the speaker perfectly. If additional level balancing is required, it is possible to do it using the power amplifier's rear-mounted gain controls.

On the front of the M-153 are two switches: the blue micro-switch on the right side of the module engages a high-pass filter at either 45 Hz or 90 Hz. When the QRx153 is going to be used as a full-range speaker, the switch should be set to the 45 Hz position (switch in the out position); when the QRx153 is being used in combination with a sub, such as the QRx218S, the switch should be set to the 90 Hz position (switch in the in position). It is easy to verify which frequency mode the switch is in by the status LED next to the switch.

The 45 Hz switch position also engages a 12 dB infrasonic filter to prevent low-frequency overload.

The M-153 module also has a 31-position precision-calibrated gain control. It is possible to precisely match system levels using this control.

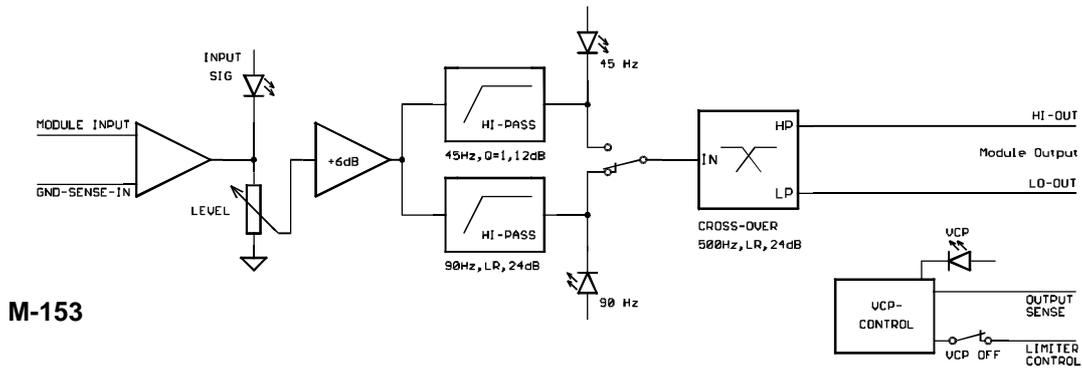
On the inside of the M-153 is EV's Voice Coil Protection (VCP) circuit, which simulates the thermal condition of the connected speaker. If the circuit detects a dangerous voltage level that might cause the connected speaker to be damaged, it lowers the signal from the amplifier to a safe level. There is a red LED on the front of the M-153 module, that activates when this circuit is in protection mode.

It is also possible to defeat the VCP circuitry. On the right rear side of the circuit board, there is a jumper switch that can be reversed to turn the VCP circuit off. It is recommended to keep this circuit active to prevent driver damage because the Precision Series amplifiers are capable of producing peak output that far exceeds the rated output.

For ease in system setup and use, there is a green signal present LED which illuminates when a signal of at least -35 dBu reaches the amplifier's input.

The combination of the M-153 module, P1202 amplifier and the QRx153 speaker system creates a wide bandwidth, low distortion and highly intelligible sound system.

BLOCK DIAGRAM



Technical Specifications M-153

Module measured in Amplifier P1202 (Slot A), no load, level control in center position, 45 Hz mode, unless otherwise specified.

Note: 0dBu = 0.775V

Channel A

Low-Cut switchable
 Frequency 90Hz / 45 Hz
 Filter type 24 dB, Linkwitz-Riley / 12 dB, Q=1

Low-Pass

Function Low-Pass-Filter; X-over
 Frequency 500 Hz
 Filter type 24 dB, Linkwitz Riley

Channel B

High-Pass
 Function High-Pass-Filter; X-over
 Frequency 500 Hz
 Filter type 24 dB, Linkwitz Riley

Gain Range $-\infty \dots +6\text{dB}$

Frequency Response
-3dB ref. 1kHz / 100Hz 26 Hz - 78 kHz

S/N Ratio, note: module in P1202 amplifier, A-weighted > 103dB

Dynamic Range, measured at module output, A-weighted, +20dBu > 116dB

THD+N < 0.05%

THD+N, typical, measured internal at module output < 0.005%

Level Control Attenuation > 85dB

Supply Voltage +/-15Vdc

Supply Current +/-71mA

Dimensions, (WxHxD), mm 120 x 43.6 x 142

Weight 150g

Additional Functions VCP, Signal Indicator

