

LPF-100 FM Composite Low Pass Filter



FM Stereo Linear Phase Filter to Reduce Baseband Noise



LPF-100 Composite Low Pass Filter, front panel

Features

- Effectively reduces spectral noise caused by noisy STL paths, stereo generator anomalies, and aggressive processing techniques
- 10th Order linear phase filtering of FM stereo composite baseband
- No degradation of stereo performance
- Low noise means a cleaner mask - ever important in today's digital world
- Provides effective reduction of interference to SCAs by protecting the 67 KHz region where stations are utilizing 67 KHz Subcarriers

Product Description

The LPF-100 Low Pass Filter is intended to be used in conjunction with suitable FM stereo generators and/or composite STL to reduce noise generated by aggressive audio processing, STL noise, or unintended signals that can sometimes be produced by stereo generators. The LPF-100 accepts an FM stereo baseband signal from a suitable stereo generator or studio-to-transmitter link receiver. The signal is fed to a 10th-order linear-phase low-pass filter, which removes information above 53 kHz. The unit features balanced or unbalanced input and three outputs, suitable for driving 50-ohm coaxial cable. There are two outputs on the rear panel to be fed to the unbalanced or balanced input of an FM exciter, and one on the front panel for test purposes. It is important that the cables being fed from composite sources, such as stereo generators and STL receivers, be kept as short as is practical. The LPF-100 can drive lines up to 25 feet with no signal degradation. However, it is advisable to keep all cable lengths as short as possible to prevent stray RF pickup.

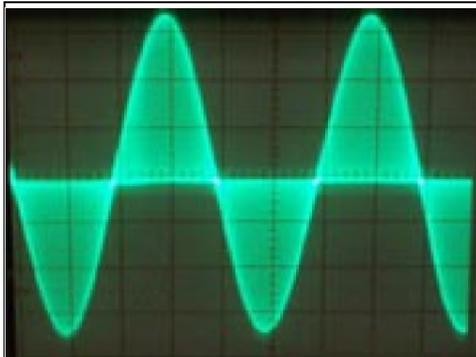
Do not feed SCA or RBDS signals through the LPF-100, as they will be attenuated. The LPF-100 is intended only for stereo baseband signals. You must plan the routing of SCA and/or RBDS signals around the LPF-100 to ensure proper injection level at the exciter.

The LPF-100 FM Stereo baseband low-pass filter is a 10th-order, linear-phase electronic filter designed to reduce baseband noise levels without materially affecting stereo performance or modulation depth. The LPF-100 can be used when noise from studio-to-transmitter links, processing equipment, or stereo generator anomalies interferes with SCA performance, or when noise levels are high enough to induce multi-path-like effects in received signals. The experts will tell you that the best low-pass filter is a linear-phase filter that offers a good step response, low ripple in the pass band, and little non-linear group delay in the passband. These are essential characteristics of an FM stereo path for good stereo performance. Poor phase response results in poor stereo separation due to pilot phase error. Poor amplitude balance causes crosstalk between the main and sub channels, resulting in poor stereo separation. The LPF-100 offers minimal group delay error and good passband amplitude response. Phase and amplitude errors are within the correction range of most modern stereo generators. Because the LPF-100 has low overshoot, it doesn't rob your station of modulation. What you get in return is reduced baseband noise, resulting in better SCA performance and low crosstalk.

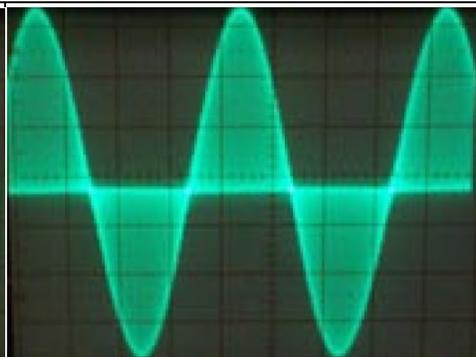
Minimizing noise in the stereo baseband has another important benefit in today's digital broadcasting environment. Less transmitted noise from your analog transmitter means better mask performance when adding in-band on-channel digital broadcast carriers to an existing system. Less interaction between analog and digital signals is a plus for better digital performance.

LPF-100 FM Composite Low Pass Filter

Technical Specifications	LPF-100
Input Level:	Composite Baseband 3.5 volts peak-to-peak, adjustable
Gain Adjustment:	6 dB variable
Input Impedance:	10Kohm or 50 ohm balanced or unbalanced
Output Impedance:	50 ohms unbalanced line driver runs open loop
Frequency Response:	± 0.1 dB 10 Hertz to 40 KHz, -1.6 dB at 50 KHz, -3.0 dB at 55 KHz, -12 dB or better at 67 KHz, -28 dB or better at 76 KHz, -50 dB or better at 100 KHz
Total Harmonic Distortion:	Better than 0.05% into 50 ohms
Intermodulation Distortion:	Better than 0.05% S.M.P.T.E. 4:1
System Noise:	Better than 80 dB below 3.5 Volts Peak to Peak
Filter Settling time:	32 uS or better to be within 1% of the input value with step input
Input Connectors:	One (1) Isolated BNC
Output Connector:	BNC Two (2) rear panel, One (1) front panel
Power Requirements:	120/240 VAC, 50/60 Hz @ 0.25A. EIC Power Entry Cord
Operating Ambient Temperature:	32 to 122 degrees, F (0 to 50 degrees, C)
Humidity:	95%, Non-condensing
Mechanical Dimensions:	19 in W x 10 in D x 1.75 in H (483 mm W x 254 mm D x 44 mm H) Standard One EIA Rack Unit Enclosure
Shipping Dimensions:	22 in W x 14 in D x 7 in H (559 mm W x 356 mm D x 178 mm H)
Shipping Weight:	8 lbs. (4 kg)



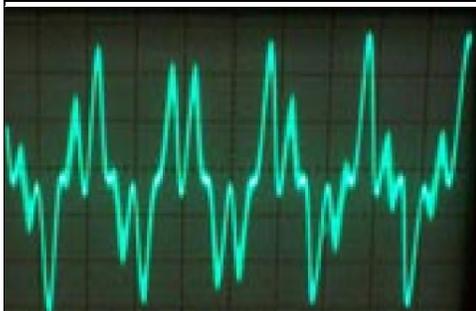
Left Only 50 Hertz - No Pilot



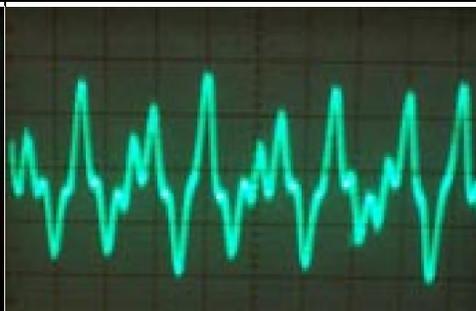
Left Only 500 Hertz - No Pilot



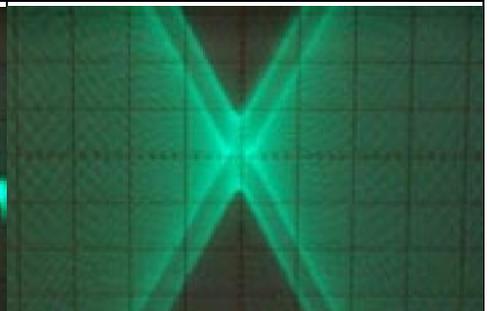
Left Only 5 KHz - No Pilot



Left Only 10 KHz - No Pilot



Left Only 15 KHz - No Pilot



L - R 50 Hertz Pilot On