

Speaker Management Systems

MIR Series - MIR480I

MIR480I uses powerful MARANI DSP in signal processing, DSP and AD/DA converter both run at 96KHz sampling rate. Complete processing functions provide a complete speaker crossover solution.

From the input gain/delay/noise gate /EQ/ compression /FIR to the output gain/delay/polarity/ crossover/FIR/EQ/ compression/peak limiter, the parametric equalizer (PEQ) has up to 13 filter types to choose from. The output crossover filter has the classic Ringwitz/Bessel/Butterworth, The NXF (Notched X-over Filter) and FIR filter with slope up to 120dB per octave are also available. The new MIR linear phase crossover filter makes it easier to engage the phase of the crossover point and produces lower latency. Everything we offer is for better sound.

With the addition of DSP plug-in, traditional processor architecture is usually fixed and unadjustable. Marani innovatively introduces the concept of plug-in, and uses powerful co-processor

to complete dynamic processing that traditional processor is difficult to complete, such as dynamic balancing, linear phase multi-segment compression, feedback suppression and other functions. This feature is an open architecture, and the type and number of plug-ins will be updated from time to time. The new design of Hard Limiter allows constant rate limiting of signals exceeding the threshold at any threshold, better protecting the speaker unit.

Each input/output channel provides a filter with a maximum of 512 tap FIR. You can use the built-in AutoEQ plus an external ASIO sound card to measure pulse and generate FIR coefficient or use third-party software to generate FIR coefficient as you need. For speaker preset, phase response can be improved and directivity can be controlled as required.

The new MIR linear phase crossover has the type and shape of the traditional IIR filter, but does not produce any phase distortion, and the delay generated is about 50% of the FIR filter.



Features

1. The whole machine operates at a sampling rate of 96KHz, and the frequency response remains flat between 20Hz-45KHz.
2. Complete 4 input processing channels + 8 output processing channels, which can realize redundant switching of overlapping signals through double matrix routing
3. Innovative full matrix mixing, input channels are sent to plug-in nodes in any proportion, different plug-in nodes can also be mixed into one or more output channels, or even two adjacent output channels can be mix into the physical output channel.
4. The input channel is equipped with dynamic loudness filter and automatic RMS compressor, which can effectively control the signal dynamics of the input channel. The new design has a hard limiter with very low distortion, which can prevent the burst large dynamic signal from damaging the speaker unit and effectively guarantee the safety of the system.
5. AutoEQ automatic balancing algorithm, can run at the input/plug-in/output position, one-

- click measurement of impulse response, according to manually set or automatically calculated flat frequency response. You can use pure IIR/ pure FIR/IIR+FIR mixed modes to completely solve the phase problem.
6. Up to 4096Taps FIR filter.
7. New MIR linear phase crossover filter: The MIR linear phase crossover filter is a brand new frequency crossover filter, can use any of the classical filter shape, without any phase distortion, so that the phase curve remains original.
8. A network interface is configured to connect to the PC directly through a network cable. By default, DHCP automatically obtains an IP address.
9. New group Settings, can control up to 128 processors at the same time, can be unified control gain, mute, PEQ and polarity, increase the convenience of multi-machine debugging.
10. Advanced Plugins, including 96kHz extended bandwidth FIR filter and Dynamic EQ...etc.

General

Dimensions-----	482x44x253(mm) 1RU
Weight, Net /Shipping -----	3.0 Kg /3.5Kg
Preset number-----	50

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Audio

Input impedance-----	20K Ω	Crosstalk-----	\leq -98dB
Output impedance-----	150 Ω	Signal-to-noise ratio-----	\geq 116dB +20dBu 1KHz
A/D dynamic range-----	123dB	Noise floor -----	\leq -96dB (A weighting)
D/A dynamic range-----	129dB	Common Mode Rejection Ratio-----	65dB
Maximum input level-----	+ 20dBu	Number of analog input channels----	4
Maximum output level-----	+ 20dBu	Number of analog output channels--	8
Total harmonic distortion----	<0.0015% (+21dBu 1KHz)	Rs485 control port-----	2
Frequency response-----	20Hz~45kHz	Network control port-----	1

DSP processing

Input & output gain-----	-18 dB ~ +12 dB, 0.1 dB step
Noise gate-----	Threshold range: -80dBu~ -45dBu attack time: 1 ms~ 1000ms; Release time: 1 ms~ 1000ms
Dynamic loudness filter -----	Gain range: 0dB-10dB attack speed: fast/medium/slow
Parametric equalizer-----	Input channels up to 27 optional types of PEQ, output channels up to 8 optional types of PEQ
Optional types include -----	Bell, 1st order high Shelf filter, 2nd order high Shelf filter Variable Q, high Shelf filter, 1st order low Shelf filter, 2nd order low Shelf filter Variable Q low Shelf filter, 1st-order low-pass filter, 2nd-order low-pass filter Variable Q low pass filter, 1st order high pass filter, 2nd order high pass filter, Variable Q high pass filter, notch filter, 1st order all-pass filter, 2nd order all-pass filter with variable Q value
The center frequency-----	adjustable within the frequency range of 20Hz~ 20KHz with a 1Hz step
Q value/bandwidth-----	The Q value range of Bell filter is 0.4~ 128, the step is 0.01 The range of the Q value of the Chevron/high-pass/low-pass filter is: 0.1~ 5.1, and the step is 0.01 The value range of bandpass/notch filter Q is: 4~ 104, step is 1
Equalizer gain range-----	-15dB~+15dB
IIR crossover filter-----	Butterworth slope: 6/12/18/24/36/48dB per octave Bessel slope: 12/24dB per octave Linkwitz-Riley slope: 12/24/36/48dB per octave NXF slope is 40/45/50/50/55/60/65/70/75dB per octave
MIR linear phase filter-----	Butterworth slope: 6/12/18/24/36/48dB per octave Bessel slope: 12/24dB per octave Linkwitz-Riley slope: 12/24/36/48dB per octave NXF slope is 40/45/50/50/55/60/65/70/75dB per octave
FIR crossover filter-----	type; high pass/low pass/band pass/external import Taps range: 256 ~ 512, slope range 21 ~ 120dB per octave Time window type: Rect /Sinc /Keiser /Hanning /Hamming /Blackman /Blackman-Harris/Blackman-Nuttal /Nuttal/Keiser -Bessel/Sine
RMS compressor-----	Starting threshold range: -10dBu~ + 20dBu; Compression ratio range:2~ 32: 1; Soft knee: 0~ 100% attack time: 0.1 ms~ 1000ms; Release time: 100ms~ 15000ms Gain compensation: Maximum 12dB
Peak limiter -----	Threshold range: -10dBu~ + 20dBu attack time: 1ms~ 1000ms; Release time: 100ms~ 5000ms
Hard limiter-----	Threshold range: -10dBu~ + 20dBu
Delay-----	The adjustable delay time of each input channel + output channel is 452ms, 0.0104ms (10.4us) Step
FIR filter -----	Each input channel and output channel can import 48kHz sampling rate 512 tap FIR filter currently, the FIR filter in the plug-in can be switched to 96kHz sampling rate, up to 4096Taps@ 48k/3600Taps@ 96k tap number to achieve full frequency linear phase.