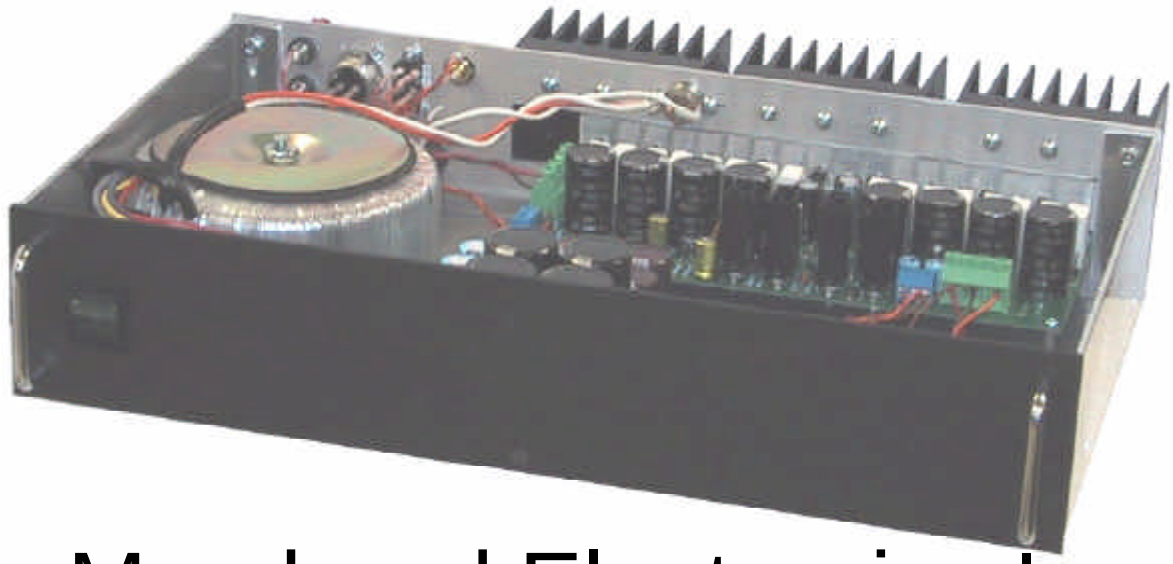
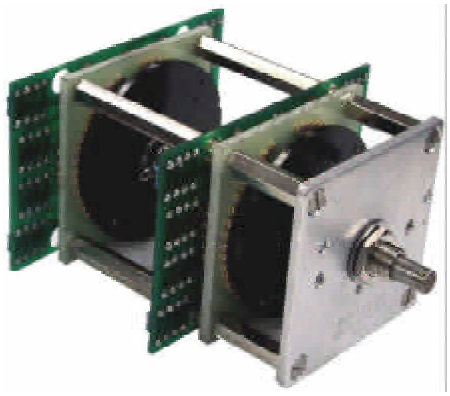
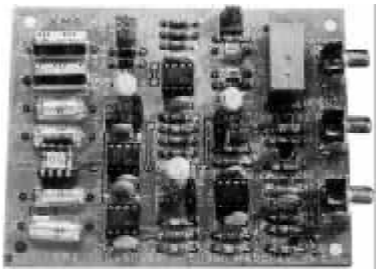
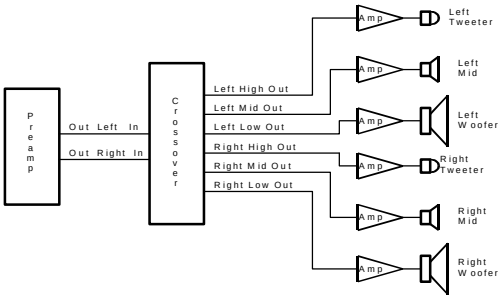


Marchand Electronics Inc.
Catalog
High Performance Audio



Electronic Crossovers
Power Amplifiers
Preamps
Equalizers
Tube / Solid State





2002

XM6 Electronic Crossover Network

Steep 24 dB/octave slope.
Crossover frequency 20 - 5000 Hz.
Outputs are always in phase.
Digital crossover frequency readout.
Fourth order constant voltage design (Linkwitz-Riley).

The XM6 electronic crossover network is a fourth order constant voltage crossover design. The unit provides both low-pass and high-pass outputs. The slope of both outputs is 24 dB/octave. Because of the fourth order design the high-pass and low-pass outputs of the crossover are always in phase with each other. The crossover network is implemented as a fourth order state variable filter. This filter provides both the high-pass and low-pass function simultaneously, guaranteeing a near perfect match of the high-pass and low-pass responses.

The crossover frequency of the XM6 electronic crossover can easily be changed from the front panel with a switch, from 20 Hz to 5000 Hz, in steps ranging from 1 Hz at 20 Hz to 100 Hz at 5000Hz. A total of 163 frequencies can be selected this way. The actual crossover frequency is displayed on a 4-digit LED display. A remote frequency control switch can be connected to the main unit with a 15' cable and allows changing the cross-over frequency setting from the listening position.

Individual level controls are provided for left and right channels high and low pass outputs. A damping control, common to both channels, allows adjustment of the frequency response at the crossover frequency.

The electronic crossover network can also be used to drive a subwoofer, where the subwoofer is shared by the two channels of the stereo system. In the summing mode the left and right channel low pass signals are averaged and presented at both left and right low pass output. The phase control switch for each channel can be used to invert the signal of each low pass output channel individually. This can be used to compensate for an inverting power amplifier or can also be used when a common subwoofer is operated with two bridged amplifiers.

The LS versions use attenuators instead of potentiometers for the level controls. The attenuators are more precise and have no distortion.

Specifications

Frequency response	*2Hz to 100 KHz, + 0.2 dB/ -3 dB*
Crossover frequency	*20 Hz - 5 KHz*
Harmonic distortion @ 1KHz	*0.01% or better*
Insertion gain	*0dB (1X)*
Filterslope	*24 dB/Octave*
Signal to Noise ratio	*better than 110dB*
Input impedance	*50K*
Output impedance	*10 Ohm typ*
Maximum input voltage	*25 V peak-peak (8.8 V RMS)*
Maximum output voltage:	*25 V peak-peak (8.8 V RMS)*
Dimensions	*17"W X 8.5"D X 2.8"H*
Power requirement	*120VAC or 240VAC, 50/60 Hz,1A fuse*
Construction	*All metal cabinet, black with white legend*

Front panel controls and readout

Level controls	-8dB to +4 dB (4 each)	Damping:	-4dB to +6 dB at Xover frequ.
Phase invert L	+/-	Phase invert R	+/-
Summing mode:	on/off	Power switch:	on/off
Frequency:	momentary up/down	Frequency readout:	4 digit LED, 20Hz to 5KHz
Level indicator:	on when signal level too high		

Rear panel connections

Inputs, outputs:	RCA phono (6), gold plated	Remote freq. switch:	3 pin DIN
Line power fuse:	1 Amp	Power:	Detachable ine cord

Ordering Information

XM6L-AA	Crossover network, assembled	$799	RA09	Rack mount adapter	$35
XM6LS-AA	Crossover w/attenuators	999	Option B	Balanced inputs/outputs	add 250

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XM9 Electronic Crossover Network

Steep 24 dB/octave slope
Fourth order constant voltage design
Outputs are always in phase
Subwoofer summing switch
No turn on/off transients
Crossover frequency 20 - 5000 Hz.

The XM9 electronic crossover network is a fourth order constant voltage crossover design. The unit provides both low-pass and high-pass outputs. The slope of both outputs is 24 dB/octave. Because of the fourth order design the high-pass and low-pass outputs of the crossover are always in phase with each other. The crossover network is implemented as a fourth order state variable filter. This filter provides both the high-pass and low-pass function simultaneously, guaranteeing a perfect match of the high-pass and low-pass responses.

The crossover frequency of the XM9 electronic crossover can easily be changed from 20 Hz to 5000 Hz with the use of frequency modules. Two modules are used to set the frequency; one for the left and one for the right channel. The modules plug into the circuit boards inside the cabinet.

Individual level controls are provided for left and right channels high and low pass outputs and damping. The damping control allows adjustment of the frequency response at the crossover frequency.

The electronic crossover network can also be used to drive a subwoofer, where the subwoofer is shared by the two channels of the stereo system. In the summing mode the left and right channel low pass signals are summed and presented at both left and right low pass output.

A 3 way version is also available; it has outputs for low pass, midrange and high pass. The 3-channel version has 3 independent channels instead of the normal two channels.

The LS versions use attenuators instead of potentiometers for the level controls. The attenuators are more precise and have no distortion.

Specifications

Frequency response	*DC to 100 KHz, + 0.2 dB/ -3 dB*
Crossover frequency	*20 Hz - 5 KHz*
Harmonic distortion @ 1KHz	*0.01% or better*
Insertion gain	*0dB (1X)*
Filterslope	*24 dB/Octave*
Signal to Noise ratio	*better than 110dB*
Input impedance	*25K*
Output impedance	*50 Ohm typ*
Maximum input voltage	*25 V peak-peak (8.8 V RMS)*
Maximum output voltage:	*25 V peak-peak (8.8 V RMS)*
Dimensions	*17"W X 8.5"D X 2.8"H*
Power requirement	*115VAC or 230VAC, 50/60 Hz,1A fuse*
Construction	*All metal cabinet, black with white legend*

Front panel controls and readout

Level controls off to +6 dB
Power switch: on/off
Summing mode: on/off

Rear panel connections

Inputs, outputs low, output high: RCA phono (6),
Line power fuse: 1 Amp
Power: IEC connector for detachable linecord

Ordering Information

XM9L-AA	Deluxe crossover	$ 599	XM9L-3AA	Deluxe crossover, 3 way	$ 699
XM9L-EZK	Deluxe EZ kit	449	XM9L-3EZK	Deluxe EZ kit, 3 way	549
XM9L-KK	Deluxe full kit	299	XM9L-3KK	Deluxe full kit, 3 way	399
XM9LS-AA	Crossover w/attenuators	999	XM9LS-3AA	Crossover w/attenuators, 3 way	1099
XM9LS-EZK	Crossover w/attenuators EZ kit	749	XM9LS-3EZK	Crossover w/att. EZ kit, 3 way	899
XM9LS-KK	Crossover w/attenuators full kit	499	XM9LS-3KK	Crossover w/att., full kit, 3 way	599
XM9-FMA	Frequency module	6	XM9L-3CHAN-AA	Deluxe crossover, 3 channel	699
XM9-FMK	Frequency module kit	2	XM9L-3CHAN-EZK	Deluxe EZ kit, 3 channel	549
Option 2B	Balanced inputs/outputs 2-way	250	XM9L-3CHAN-KK	Deluxe full kit, 3 channel	399
RA09	Rack mount adapter	35	XM9LS-3CHAN-AA	Crossover w/attenuators, 3 chan.	1099
Option 3B	Balanced i/o, 3 way	350	XM9LS-3CHAN-EZK	Crossover w/att. EZ kit, 3 chan.	899
			XM9LS-3CHAN-KK	Crossover w/att., full kit, 3 chan.	599

We stock all crossover frequencies from 20 Hz to 5000 Hz.

XM16 Electronic Crossover Network

Steep 48 dB/octave slope
Eighth order constant voltage design
Outputs are always in phase
Subwoofer summing switch
No turn on/off transients
Crossover frequency 20 - 5000 Hz.
2-Way or 3-Way Stereo

The XM16 electronic crossover network module is an eighth order constant voltage (Linkwitz-Riley) crossover design. The XM16 provides both low-pass and high-pass outputs. The slope of both outputs is 48 dB/octave. Because of the eighth order design the high-pass and low-pass outputs of the crossover are always in phase with each other.
Individual level controls are provided for left and right channels high and low pass outputs.
The electronic crossover network can also be used to drive a single subwoofer, where the subwoofer is shared by the two channels of the stereo system. In the summing mode the left and right channel low pass signals are summed and presented at both left and right low pass output.

The crossover frequency of the XM16 electronic crossover can easily be changed by replacing the four frequency modules. There are two frequency modules for the low pass and two for high pass channel. All are usually set at the same frequency, but they can be set at different frequencies for special applications.
The XM16 uses only high grade components: 1% metal film resistors, 1% polypropylene film capacitors for the filter capacitors and dual FET input operational amplifiers. All connectors are gold plated.
A 3 way version is also available; it has outputs for low pass, midrange and high pass.
The LS versions use attenuators instead of potentiometers for the level controls. The attenuators are more precise and have no distortion.

Specifications

Frequency response	*DC to 100 KHz, + 0.2 dB/ -3 dB*
Crossover frequency	*20 Hz - 5 KHz*
Harmonic distortion @ 1KHz	*0.01% or better*
Insertion gain	*0dB (1X)*
Filterslope	*48 dB/Octave*
Signal to Noise ratio	*better than 110dB*
Input impedance	*100K*
Output impedance	*50 Ohm typ*
Maximum input voltage	*25 V peak-peak (8.8 V RMS)*
Maximum output voltage:	*25 V peak-peak (8.8 V RMS)*
Dimensions	*17"W X 8.5"D X 2.8"H*
Power requirement	*120VAC or 240VAC, 50/60 Hz,1A fuse*
Construction	*All metal cabinet, black with white legend*

Front panel controls and readout

Level controls off to +6 dB
Power switch: on/off
Summing mode: on/off

Rear panel connections

Inputs, outputs low, output high: RCA phono (6),
Line power fuse: 1 Amp
Power: IEC connector for detachable linecord

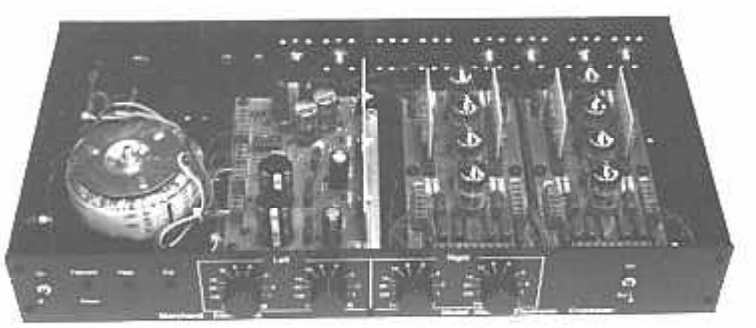
Ordering Information

XM16L-AA	Deluxe crossover	$ 699	XM16L-3AA	Deluxe crossover, 3 way	$ 799
XM16L-EZK	Deluxe EZ kit	549	XM16L-3EZK	Deluxe EZ kit, 3 way	649
XM16L-KK	Deluxe full kit	399	XM16L-3KK	Deluxe full kit, 3 way	499
XM16LS-AA	Crossover w/attenuators	1099	XM16LS-3AA	Crossover w/attenuators, 3 way	1399
XM16LS-EZK	Crossover w/attenuators EZ kit	849	XM16LS-3EZK	Crossover w/att. EZ kit, 3 way	1099
XM16LS-KK	Crossover w/attenuators full kit	599	XM16LS-3KK	Crossover w/att., full kit, 3 way	749
XM16-FMA	Frequency module	8	XM16-FMK	Frequency module kit.	4
Option 2B	Balanced inputs/outputs 2-way	250	Option 3B	Balanced i/o, 3 way	350
RA09	Rack mount adapter	35			

We stock all crossover frequencies from 20 Hz to 5000 Hz.

web pages: www.marchandelec.com email: info@marchandelec.com

XM26 Tube Electronic Crossover Network



Vacuum Tube technology for great sound quality.
Steep 24 dB/octave slope.
Crossover frequency 20 - 5000 Hz.
Subwoofer summing option.
Heavy duty gold plated RCA connectors for input and output.
Power supply sequencing for long tube life.

The XM26 Electronic Crossover Network is a fourth-order constant-voltage crossover design that provides both low-pass and high-pass outputs. The slope of each output is 24 dB/octave. Because of the fourth-order design the high-pass and low-pass outputs of the crossover are always in phase with each other. The XM26 uses 4 12AX7 tubes in each of the two channels. It has a solid state regulated power supply for the filament voltage. Power is provided with a heavy duty toroidal power transformer. The power supply turn-on sequence delays the voltage to the plates of the tubes in order to prolong tube life.

The crossover frequency of the XM26 Electronic Crossover Network can easily be set by replacing frequency modules. A total of four frequency modules set the crossover frequency for left and right low and high pass filters. Each frequency module has the capacitors and resistors that set the crossover frequency and slope for that channel. Normal slope is 24 dB/oct 4th order constant voltage (Linkwitz-Riley) but modules for first, second and third order slopes are also available.

The XM26 front panel has 4 calibrated level controls; one each for low pass left channel, high pass left channel, low pass right channel and high pass right channel . A sum switch allows the low pass channels to be summed. This is useful when using the XM26 with a common subwoofer.

The crossover uses only high quality components. The circuit boards for the filters are double-sided plated through hole. Coupling uses polypropylene capacitors, filter capacitors are polypropylene and most resistors are 1% metal film precision types.

The XM26 is housed in a black heavy-duty steel cabinet with white lettering. High quality gold plated RCA connectors with Teflon insulators for input and output are located on the rear of the cabinet. The front of the cabinet has the level controls with black aluminum knobs and 3 LED indicators for the power supply.

The XM26 is also available as a kit. The kit comes with all parts, tubes and detailed assembly instructions. The EZ kit has the circuit boards already assembled.

The S versions use attenuators instead of potentiometers for the level controls. The attenuators are more precise and have no distortion.

Specifications

Frequency response	*5Hz to 100 KHz, +/ -1 dB*
Crossover frequency	*20 Hz - 5 KHz*
Harmonic distortion @ 1KHz	*0.1% or better*
Insertion gain	*-1dB (1X)*
Filterslope	*24 dB/Octave standard, 6,12 1nd 18 dB/oct. available*
Signal to Noise ratio	*better than 110dB*
Input impedance	*1M*
Output impedance	*500 Ohm typ*
Maximum input voltage	*50 V peak-peak (17 V RMS)*
Maximum output voltage:	*50 V peak-peak (17 V RMS)*
Dimensions	*17"W X 8.5"D X 2.8"H*
Power requirement	*120/ 240VAC, 50/60 Hz,1A fuse*
Construction	*All metal cabinet, black with white legend*

Front panel controls and readout

Level controls	off to -1 dB	Summing mode:	on/off
Power switch:	on/off	LED:	power, plate, output

Rear panel connections

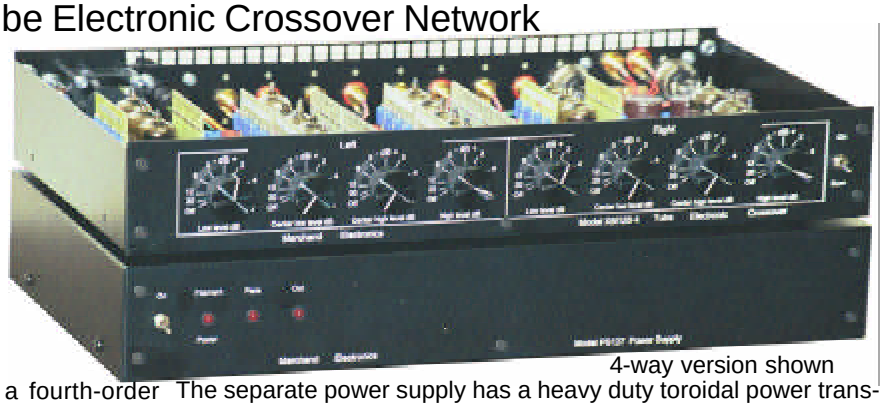
Inputs, outputs:	RCA phono (6),	Power:	Detachable line cord
Line power fuse:	1 Amp		120VAC/240VAC selector

Ordering Information

XM26-AA	Crossover network	$1495	XM26-FMA	Frequency module	$10
XM26S-AA	Crossover w/attenuators	1895	XM26-FMK	Frequency module kit	7
XM26-EZK	EZ Kit	799	RA09	Rack mount adapter	35
XM26S-EZK	EZ Kit w/attenuators	1099	Option B	Balanced inputs/outputs	600
XM26-KK	Full Kit	699			
XM26S-KK	Full Kit w/attenuators	899			

XM126 Tube Electronic Crossover Network

2-, 3- and 4-way versions available.
Separate power supply
Steep 24 dB/octave slope.
Crossover frequency 20 - 5000 Hz.
Subwoofer summing switch.
Balanced (XLR) and Single-ended (RCA) inputs. Heavy duty gold plated RCA connectors for input and output.
Balanced outputs optional.
Power supply sequencing for long tube life.



4-way version shown

The XM126 Electronic Crossover Network is a fourth-order constant-voltage crossover design that provides both low-pass and high-pass outputs. The XM126 is available in 2-way, 3-way and 4-way versions.

The crossover frequency of the XM126 Electronic Crossover Network can easily be set by replacing frequency modules. A total of four frequency modules set the crossover frequency for each crossover point. Each frequency module has the capacitors and resistors that set the crossover frequency and slope for that channel. Normal slope is 24 dB/oct 4th order constant voltage (Linkwitz-Riley) but modules for first, second and third order slopes are also available.

The XM126 front panel has 2 calibrated level controls (left and right) for each frequency band.

Both balanced (XLR) and Single-ended (RCA) inputs are available. A switch on the rear panel selects which one is active.

A sum switch on the front panel allows the low pass channels to be summed. This is useful when using the XM126 with a common subwoofer.

The separate power supply has a heavy duty toroidal power transformer for plate voltage and filament voltage. The power supply turn-on sequence delays the voltage to the plates of the tubes in order to prolong tube life.

The crossover uses all high quality components. The circuit boards for the filters are double-sided plated through hole. Filter capacitors are 1% polypropylene and filter resistors are 1% metal film precision types.

The XM126 is housed in two black heavy-duty steel cabinets with white lettering. High-quality gold plated RCA connectors with Teflon insulators for input and output are located on the rear of the cabinet. The front of the cabinet has the level controls with black aluminum knobs and 3 LED indicators for the power supply.

The XM126 is also available as a kit. The kit comes with all parts, tubes and detailed assembly instructions. The EZkit has the circuit boards pre-assembled.

The S versions use attenuators instead of potentiometers for the level controls. The attenuators are more precise and have no distortion.

Specifications

Frequency response	*5Hz to 100 KHz, +/ -1 dB*
Crossover frequency	*20 Hz - 5 KHz*
Harmonic distortion @ 1KHz	*0.1% or better*
Insertion gain	*0dB (1X)*
Filterslope	*24 dB/Octave standard, 6, 12 and 18 dB/oct. available*
Signal to Noise ratio	*better than 110dB*
Input impedance	*500 KOhm*
Output impedance	*500 Ohm typ*
Maximum input/output voltage	*25 V/50V peak-peak (8.5/17 V RMS)*
Dimensions (each cabinet)	*17"W X 8.5"D X 2.8"H*
Power requirement	*120/ 240VAC, 50/60 Hz, 1A fuse slow*

Front panel controls and readout

Level controls	off to +6 dB	Summing mode:	on/off
Power switch:	on/off	LED:	power, plate, output

Rear panel connections

Inputs:	RCA and XLR	Input selector switch	
Outputs:	RCA	Fan w. on/off switch	
Power:	Detachable line cord	120VAC/240VAC selector switch	
Line power fuse:	1 Amp		

Ordering Information

XM126-2AA	2-Way Crossover network	$1695	XM126S-2AA	2-Way Crossover network w/att.	$2095
XM126-3AA	3-Way Crossover network	2595	XM126S-3AA	3-Way Crossover network w/att.	3195
XM126-4AA	4-Way Crossover network	3495	XM126S-4AA	4-Way Crossover network w/att.	4295
XM126-2EZK	2-Way Crossover EZ kit	995	XM126S-2EZK	2-Way Crossover EZ kit w/att.	1295
XM126-3EZK	3-Way Crossover EZ kit	1395	XM126S-3EZK	3-Way Crossover EZ kit w/att.	1845
XM126-4EZK	4-Way Crossover EZ kit	1995	XM126S-4EZK	4-Way Crossover EZ kit w/att.	2595
XM126-2KK	2-Way Crossover kit	795	XM126S-2KK	2-Way Crossover kit w/att.	995
XM126-3KK	3-Way Crossover kit	1195	XM126S-3KK	3-Way Crossover kit w/att.	1495
XM126-4KK	4-Way Crossover kit	1695	XM126S-4KK	4-Way Crossover kit w/att.	2095
XM126-FMA	Frequency module	10	RA09	Rack mount adapter	70
XM126-FMK	Frequency module kit	7	XM126-M	Manual only	3
Option B	Balanced outputs	$400...$800			

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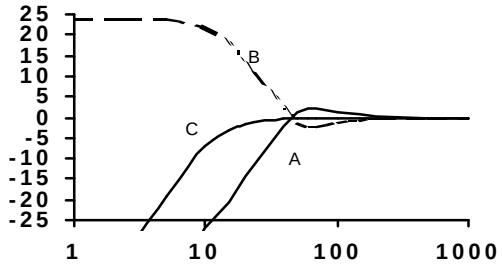
WM8 “BASSIS” Bass Correction Equalizer

Adjustable bass boost and damping
Adaptable to all acoustic-suspension speakers
Rumble filter
20 Hz subsonic filter

The BASSIS is a specialized parametric equalizer with two purposes: (1) to correct the irregular bass response of many acoustic-suspension loudspeakers; (2) to extend the bass response as much as two octaves lower.

The damping (Q) of the new bass cutoff can be adjusted according to the listening room acoustics and the user’s tastes. In consequence, any speaker can be corrected to obtain deep yet well controlled bass, providing music with a greater sense of impact and “openness”.
Curve A is an example of the bass response of a typical speaker, with bass falling off below 60 Hz. By adjusting the BASSIS, its own frequency response (curve B) may be made the inverse of the speakers curve, down to 15 Hz. The combination of the equalizer and speaker is shown in curve C, with a smooth response and a -3dB point at 15 Hz. Note that it is generally not possible to perform this sort of correction with a conventional graphic equalizer due to the spacing of the frequency bands of the sliders.
The BASSIS can also reduce the “boominess” of some vented loudspeakers; or the vent can be plugged for use with the full range of equalizer options. The BASSIS employs a 4-amplifier



bi-quadratic filter, with additional op-amps to allow independent adjustment of the various parameters and to ensure system compatibility. The circuit contains high-speed op-amps, film capacitors and metal film resistors. Four rotary controls are provided for each channel, to match the cutoff frequency and damping of any acoustic-suspension speaker and to set the bass boost and net damping. Switchable RUMBLE (bass-blend) and 20Hz HIGH-PASS filters are included, as well as a BYPASS switch and a TAPE-MON switch in case the unit is inserted in a receiver’s sole tape loop.
The WM8 is housed in an all metal cabinet, black paint with white lettering.

Specifications

Frequency response	*2Hz to 100 KHz, +/ -1 dB*
Harmonic distortion @ 1KHz	*0.01% or better*
Insertion gain	*0dB (1X)*
Signal to Noise ratio	*better than 110dB*
Input impedance	*100K*
Output impedance	*10 Ohm typ*
Maximum input voltage	*25 V peak-peak (8.8 V RMS)*
Maximum output voltage:	*25 V peak-peak (8.8 V RMS)*
Dimensions	*17”W X 8.5"D X 2.8”H*
Power requirement	*120 or 240VAC, 50/60 Hz,1A fuse*
Construction	*All metal cabinet, black with white legend*

Front panel controls and readout

Bass boost range	0-24 dB	Net Q range:	.25 to 1.0
Speaker resonance range:	30 Hz to 130 Hz	Speaker Q range	-4dB to +6 dB
Rumble:	on/off	20 Hz Cut:	on/off
Tape mon	on/off	Bypass	on/off
Power switch	on/off		

Rear panel connections

Inputs, outputs:	RCA phono (4),	Tape in, Tape out:	RCA phono (4),
Line power fuse:	1 Amp	Power:	Line cord attached

Ordering Information

WM8-AA	Fully assembled and tested	$499	WM8-EZK	EZ Kit with manual and all parts	$399
WM8-KK	Kit with manual and all parts	299	RA09	Rack mount adapter	35

PR41 Passive Preamp

Totally passive design
46 step main volume control
23 step balance control
Selector for 6 inputs
All precision metal film resistors

The PR41 passive preamp provides a volume and balance control and input selector of the highest quality.
The stepped attenuator volume control has 46 steps of attenuation of 1.25 dB each. The balance control also uses a stepped attenuator with 0.6 dB steps. In one direction only the left channel gets attenuated and in the other direction only the right channel gets attenuated. The level and balance controls are each assembled using a high quality mil-spec rotary switch and precision metal film resistors.
The input selector switch can select from 6 input channels.

The front panel has the 3 controls. The rear channel has the 6 pair of input connectors and the output connectors. There is no power cord or power supply of any kind. All connectors are heavy duty brass and gold plated with Teflon insulation. The cabinet is black with white lettering. Knobs are black aluminum.
The PR41 is compatible with most any component with line level outputs, like CD player, tuner, tape recorder, etc., and with most power amplifiers, tube or solid state. It can also drive any of our electronic crossover networks.

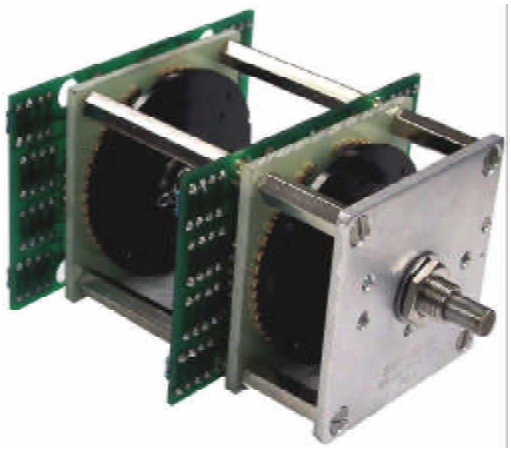
The readings for volume and balance are calibrated in dB. These readings are accurate to 0.2 dB when the PR41 is used with an amplifier that has the nominal input impedance of 50 Kohm. The deviation from the calibration when using amplifiers with different input impedance is small and generally not relevant.

An economy version with 23-position switches is also available.

A Balanced version with XLR connectors is also available. Please consult factory for details.

<u>Specifications</u>

Frequency response	*DC to 100 KHz, +/ -1 dB*
Harmonic distortion @ 1KHz	*0.01% or better*
Insertion gain	*0dB (1X)*
Input impedance	*20K*
Volume control steps	*1.25 dB*
Balance control steps	*0.6 dB*
Volume control range	*-56dB ... 0 dB*
Balance control range	*-6dB ... 0dB ... -6dB*
Dimensions	*17"W X 8.5"D X 2.8"H*
Power requirement	*none*
Construction	*All metal cabinet, black with white legend*



High quality 46 position attenuator

<u>Front panel:</u>

Volume control	rotary 46-step stepped attenuator	Balance control	rotary 23-step stepped attenuator
Source selector	rotary 6-pos. channel selector		

<u>Rear Panel:</u>

Inputs	6 pair of RCA connectors.	Output	1 pair of RCA connectors.

<u>Options:</u>

Balanced inputs/outputs

<u>Ordering Information:</u>

PR41-AA	Fully assembled and tested	$995	PR41-KK	Kit with manual and all parts	$495
PR41-EZK	EZ Kit with manual and all parts	695	PR41-M	Manual only	3
PR41S-AA	Preamp w/ 23 pos. attenuator, assm.	495	PR41S-KK	Preamp w/ 23 pos. attenuator, kit	295
PR41S-EZK	Preamp w/ 23 pos. attenuator, EZkit	345	Option B	Fully Balanced design w. XLR	add 600
RA09	Rack mount adapter	35			

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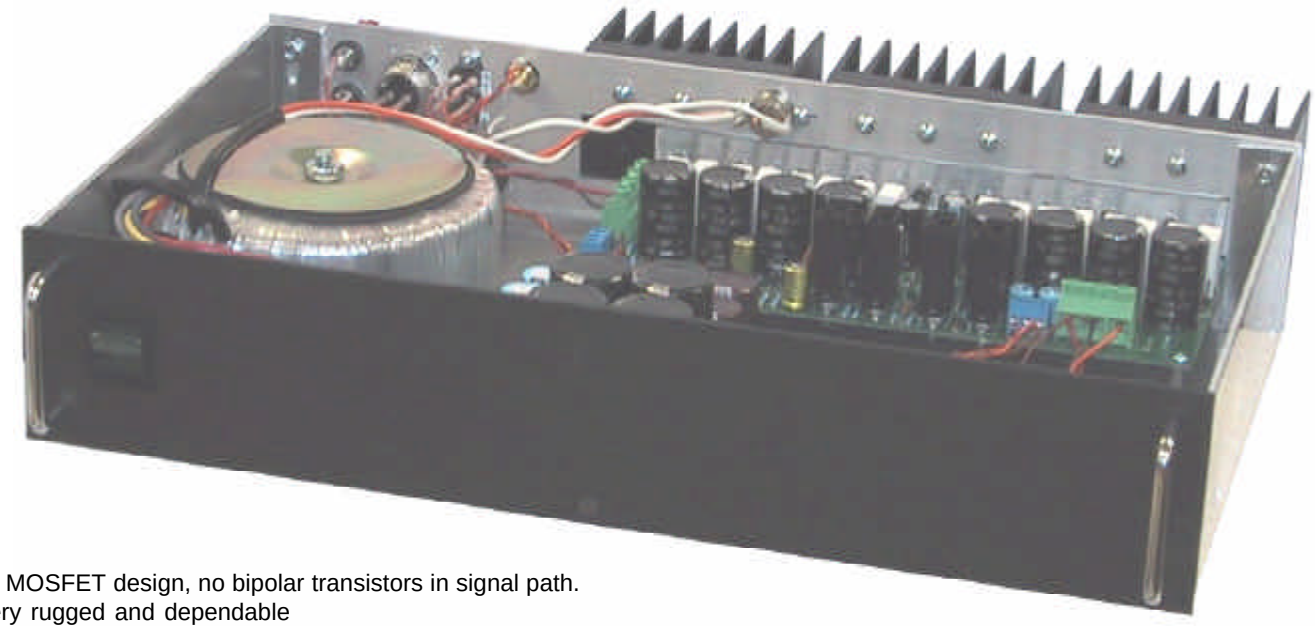
MB401and MB402 MOSFET Power Amplifier



All MOSFET design, no bipolar transistors in signal path.
Very rugged and dependable
Balanced and Single Ended Inputs on the MB401
Heavy duty 500VA toroidal power transformer
Heavy duty alumnum chassis
Large power supply capacitance
Thermal overload protection
Current overload protection
Class A option available

Specifications

		MB401 Mono	*MB402 Stereo*
Frequency response (, +/ -1 dB)		*10Hz to 50 KHz*	*10Hz to 50 KHz*
Harmonic distortion @ 1KHz, 1W		*0.02%*	*0.02%*
Voltage gain		*32dB (40X)*	*32dB (40X)*
Input impedance XLR		*25K*	*NA*
RCA		*500K*	*500K*
Peak Output Current		*15A*	*50A*
Output Load		*4... 8 Ohm*	*4 ... 8 Ohm*
Max power output	*8 Ohm*	*300W*	*150W + 150W*
	4 Ohm	*400W*	*200W + 200W*
	Class A option	*40W*	*20W + 20W*
Dimensions		*17" x 3.5" x 12" (WxHxD)*	*17" x 3.5" x 12" (WxHxD)*
Power requirement		*120VAC, 6A fuse*	*120VAC, 6A fuse*
Power supply capacitance		*80.000 uF*	*60.000 uF*
Construction		*All metal cabinet, black with white legend or white with black legend*	

Front panel:
On/Off switch

Rear Panel:
Power entry connector + Fuse
Output connectors (Binding posts)
Single ended input connectors (RCA)
Balanced input connector(XLR) (MB301)
Switch for Balanced/Single-ended (MB301)

Options:
Class A operation. (Option A)
220/240VAC line power input (option 220).

Ordering Information:

MB401-AA	300W monoblock amp	$ 1850	MB401-KK	300W monoblock amp, kit	$ 990
MB402-AA	300W stereo amp	1850	MB402-KK	300W stereo amp, kit	990
Option 220V	220/240VAC line power input	50	MB401-EZK	300W monoblock amp, EZ kit	1200
Option A	Class A operation	100	MB402-EZK	300W stereo amp, EZ kit	1200
RA400	Rack mount adapter	50			

MB501and MB502 MOSFET Power Amplifier

left

right

All MOSFET design, no bipolar transistors in signal path.
Very rugged and dependable
Balanced and Single Ended Inputs
Heavy duty toroidal power transformer
Heavy duty alumnum chassis
Thermal overload protection
Current overload protection
Class A option available

Specifications

		MB501 Mono	*MB502 Stereo*
Frequency response (, +/ -1 dB)		*10Hz to 50 KHz*	*10Hz to 50 KHz*
Harmonic distortion @ 1KHz, 1W		*0.02%*	*0.02%*
Voltage gain		*32dB (40X)*	*32dB (40X)*
Input impedance XLR		*25K*	*25K*
RCA		*500K*	*500K*
Peak Output Current		*10A*	*10A*
Output Load		*4... 8 Ohm*	*4 ... 8 Ohm*
Max power output	*8 Ohm*	*125W*	*75W + 75W*
	4 Ohm	*250W*	*100W + 100W*
	Class A option	*20W*	*10W + 10W*
Dimensions		*17" x 3.5" x 12" (WxHxD)*	*17" x 3.5" x 12" (WxHxD)*
Power requirement		*120VAC, 6A fuse*	*120VAC, 6A fuse*
Power supply capacitance		*30.000 uF*	*30.000 uF*
Construction		*All metal cabinet, black with white legend*	

Front panel:
On/Off switch

Rear Panel:
Power entry connector + Fuse
Output connectors (Binding posts)
Single ended input connectors (RCA)
Balanced input connector (XLR)
Switch for Balanced/Single-ended

Options:
Class A operation. (Option A)
220/240VAC line power input (option 220).

Ordering Information:

MB501-AA	125W monoblock amp	$ 999	MB501-KK	125W monoblock amp, kit	$ 599
MB502-AA	150W stereo amp	999	MB502-KK	150W stereo amp, kit	599
Option 220V	220/240VAC line power input	50	MB501-EZK	125W monoblock amp, EZ kit	799
Option A	Class A operation	100	MB502-EZK	150W stereo amp, EZ kit	799

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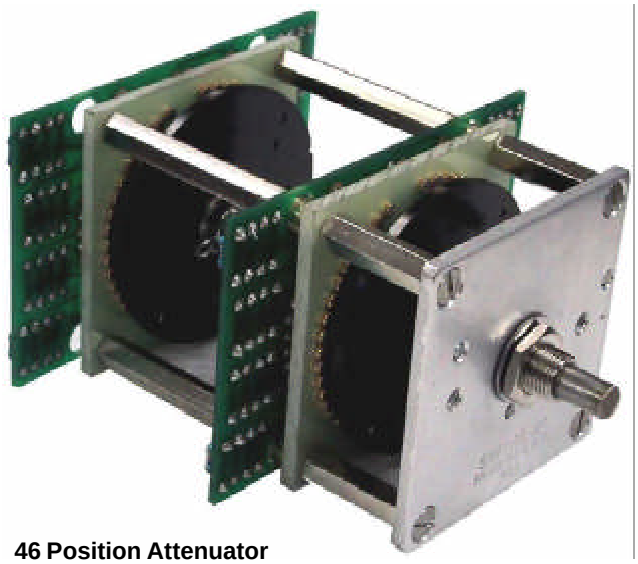
Eclipse 16W Single Ended MOSFET Class A amplifier

10 Watt RMS Monoblock.
Pure class A.
Has only one transistor, a power MOSFET.
82000uF filter capacitors.
Weight 19 pounds.
Dimensions 8" x 12" x 7".

Ordering Information:

EC616-A	Eclipse power amplifier, assembled	$995	EC616-K	Eclipse power amplifier, kit	$695
EC616-EZK	Eclipse power amplifier, EZkit	795			

Attenuators



46 Position Attenuator
Stereo Unit Shown

24 Position Attenuator
Mono Unit Shown

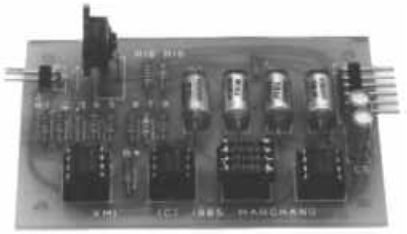
Ordering Information:

ATT46-1-A	46 pos. attenuator, assembled,mono	295	ATT46-1-K	46 pos. attenuator, kit mono	195
ATT46-2-A	46 pos. attenuator, assembled,stereo	495	ATT46-2-K	46 pos. attenuator, kit,stereo	295
ATT24-1-A	24 pos. attenuator, assembled,mono	100	ATT24-1-K	24 pos. attenuator, kit mono	50
ATT24-2-A	24 pos. attenuator, assembled,stereo	150	ATT24-2-K	24 pos. attenuator, kit,stereo	75
ATT12-1-A	12 pos. attenuator, assembled,mono	25	ATT12-1-K	12 pos. attenuator, kit mono	15

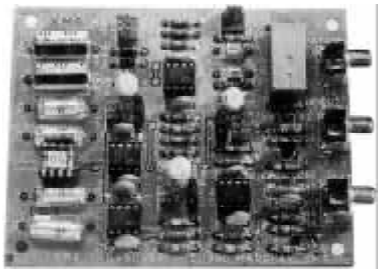
Attenuators with more than two sections are also available. Please consult factory for details and pricing.

XM Series single board electronic crossover networks

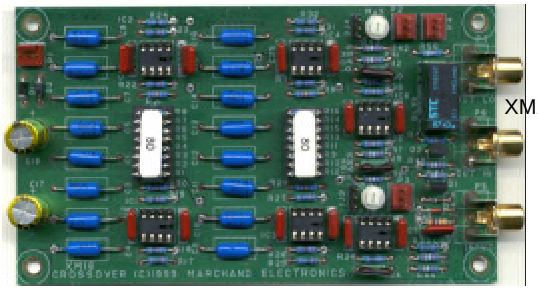
These are the “board only” versions of the crossover networks used in the complete crossover products. They need a power supply and cabinet for proper operation. Slopes are 24 dB/oct or 48 dB/oct. All modules provide both hi-pass and low pass outputs. Modules are single channel (mono). Two each are required for stereo operation. Frequency modules are available for all frequencies 20-5000 Hz. All modules have constant voltage (Linkwitz-Riley) alignment; this means that the outputs are always in phase with each other. All modules can also be modified for other slopes. These crossovers are available assembled, as a kit or as bare boards. The manuals are also available separately (free download from our website). Precision metal film resistors and polypropylene capacitors are used in the filter sections and where apropriate. Op-grade op-amps are available separately. Please specify crossover frequency when ordering



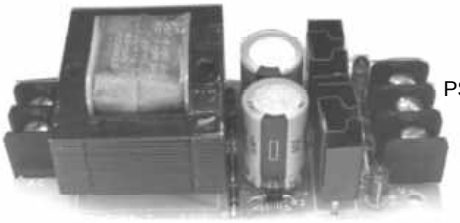
XM1



XM9



XM16



PS10

XM1 24 DB/oct crossover network.

Steep 24 dB/octave slope.
Fourth order constant voltage design (Linkwitz-Riley).
Damping control on board
Uses 3 op-amps
Dimension 2” x 3”

XM9 24 DB/oct crossover network.

Steep 24 dB/octave slope.
Fourth order constant voltage design (Linkwitz-Riley).
Controls for dampling and output levels on board.
Can use off-board controls.
Muting relay suppesses turn on/turn off transients
Uses 4 op-amps
Dimension 3.2” x 4.2”

XM16 48 DB/oct crossover network.

Extra steep 48 dB/octave slope.
Eight order constant voltage design (Linkwitz-Riley).
Controls for dampling and output levels on board.
Can use off-board controls.
Muting relay suppesses turn on/turn off transients
Uses 6 op-amps
Dimension 3.2” x 5.8”

XM26&XM126 Tube crossover network.

All boards for the tube crossovers are available also.
Please consult factory for details.

PS10 Dual 15 V regulated supply.

500 mA each output. Short circuit protected
Dimension 4.3” x 2.0" x 1.5"
Powers up to 8 crossovers
Dual winding transformer
120VAC/220VAC input

PS110 Dual 15 V regulated supply.

Similar to PS10 above but with toroidal power transformer

Ordering Information:

XM1-A	Crossover network, assembled	$30	XM1-K	Kit with manual and all parts	$25
XM1-FMA	Frequency module	6	XM1-FMK	Frequency module kit	2
XM1-B	Bare board with manual	10	XM1-M	Manual only	3
XM9-A	Crossover network, assembled	70	XM9-K	Kit with manual and all parts	50
XM9-FMA	Frequency module	6	XM9-FMK	Frequency module kit	2
XM9-B	Bare board with manual	20	XM9-M	Manual only	3
XM16-A	Crossover network, assembled	80	XM16-K	Kit with manual and all parts	60
XM16-FMA	Frequency module	8	XM16-FMK	Frequency module kit	3
XM16-B	Bare board with manual	20	XM16-M	Manual only	3
PS10-A	Power supply, assembled	50	PS10-K	Kit with manual and all parts	45
PS10-B	Bare board with manual	20	PS10-M	Manual only	3
PS110-A	Power supply, assembled	80	PS110-K	Kit with manual and all parts	65
PS110-B	Bare board with manual	20	PS110-M	Manual only	3
WM8-A	Single channel board assembled	90	WM8-K	Single channel board kit	70
WM8-B	Single channel bare board+manual	20	OPA2134	Upgrade op-amp (Burr-Brown)	4

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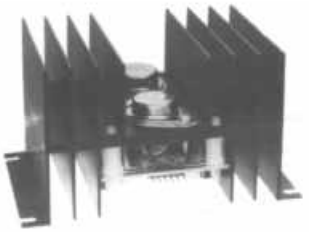
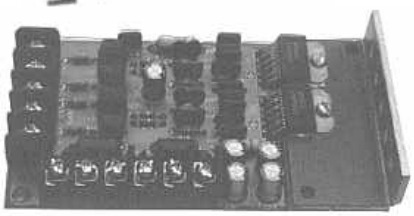
Bipolar and MOSFET power amplifier modules

These power amplifier modules require an external dual voltage power supply for operation. The PM21 and PM224 also require a suitable heatsink for proper operation. The PS11 power supply is suitable for any of these amplifiers. The power output of these modules depends on the power supply voltage. All amps can drive 8 Ohm or 4 Ohm speakers.
The PM2 has an unbalanced, AC coupled input. All others have balanced / single ended inputs with selectable AC/DC coupling.



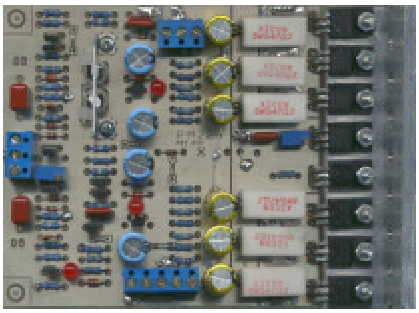
PM2

PM2 Bipolar Darlington power amplifier module
50 Watt RMS into 8 Ohm
Complementary Darlington output stage
Integrated Circuit driver circuit
Integrated heatsink
Over-current and over-temperature protection
Power supply range +/- 20VDC to +/- 40VDC
Voltage gain 20dB (10x). Input impedance 100K.
Dimensions 3”x5”x2.5”



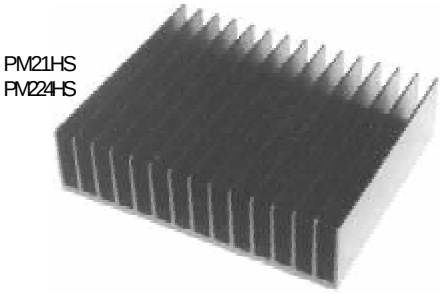
PM21

PM21 Dual power amplifier module
Two times 50 Watt RMS into 8 Ohm
Integrated Circuit Power Amplifier (LM3886)
Over-current and over-temperature protection
Differential (Balanced) or Single Ended Inputs
Two amplifiers on board
Can be bridged
Power supply range +/- 20VDC to +/- 35VDC
Voltage gain 26dB (20x). Input impedance 25K.
Dimensions 3”x5”x1”



PM224

PM224 MOSFET power amplifier modules
All MOSFET design.
Class AB operaton
Rugged Construction
Low distortion
200 Watt RMS into 8 Ohm
Power supply range +/- 20VDC to +/- 80VDC
Voltage gain 26dB (20x). Input impedance 25K.
Dimensions 4”x5”x1”



PM21HS
PM224HS

PM21HS Heatsink for power amp modules
PM224HS Black anodized aluminum
5.0”x6.1”x1.6”
0.8^{0}C/W

PS11

PS11 Dual power supply
40,000 uF filter capacitance
Heavy duty toroidal transformer
Powers one or more amplifiers above
Available in voltages 20V to 70 V (consult factory)
Available with 160VA, 220VA, 330VA or 500VA transformer

Ordering Information:

PM2-A	Power amplifier assembled	$ 100	PM2-K	Power amplifier kit	$80
PM2-B	Bare board	10	PM2-M	Manual only	3
PM21-A	Power amplifier assembled	100	PM21-K	Power amplifier kit	80
PM21-B	Bare board	20	PM21-M	Manual only	3
PM21-HS	Custom Heatsink for PM21	20	PM224-HS	Custom Heatsink for PM224	20
PM224-A	200W Amplifier assembled	200	PM224-K	200W Amplifier kit	130
PM224-B	200W Bare board + manual	20	PM224-M	Manual only	3
PS11-A	Dual power supply assembled	200	PS11-K	Dual power supply kit	130
PS11-B	Bare board + manual	20	PS11-M	Manual only	3
Option 160	160VA transformer	standard	Option 220	220VA transformer	add $20
Option 220	330VA transformer	add $40	Option500	500VA transformer	add $60

MARCHAND ELECTRONICS INC. date:
ORDER FORM

Quantity	Part Number	Description	Price each	Total
			$	$

Total of all items	$
Shipping and Handling	$
NY State residents add 8% sales tax	$
Total enclosed	$

Shipping Method ___ UPS GROUND ___ UPS BLUE
Please check one
___ Other:_____

Payment Method ___ COD ___ Check or Money Order
Please check one ___ Master Card ___ Visa ___ Discover ___ American Express ___PayPal

For charge orders only: Card Number _____.

If billing address is different please write it on reverse

Expiration Date _____.

Signature _____.

SHIP TO:
Name _____.

Address _____.

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City _____.

State _____ ZIP _____ Country _____.

Telephone (_____) _____ email: _____.

Please send your purchase order to:
Marchand Electronics Inc. PO Box 473, Webster, NY 14580, or email to orders@marchandelec.com.
You can also order by phone (585)872-0980 or by FAX (585)872-1960
For prepaid orders please include $10.00 for shipping and handling by surface in the continental USA. Outside the continental USA (Hawaii, Canada, etc..) please consult factory. For Charge orders and COD orders we will calculate the actual shippping charges for you. For COD orders there is an additional charge of $5.50 (USA only). There is no minimum order. We normally ship first class mail or UPS in USA. Outside the USA we recommend shipping by air mail. Other methods include UPS air (BLUE, RED) Federal Express, etc. Please make arrangements with the factory.

The electronic crossover is used to drive individual loudspeakers for separate portions of the audio frequency spectrum. A two way crossover is used for bass and high frequency speakers. A three way crossover is used when driving bass, midrange and high frequency speaker. The signal from the preamp is passed to the electronic crossover network. The outputs of the crossover network are then connected to the power amplifiers for the individual loudspeakers. A typical configuration like this might have the crossover frequency set at 300 to 1000 Hz, depending on the type of loudspeakers used. When used with subwoofers as low frequency speakers, the typical crossover frequency is around 100 Hz. The range is 50 to 150 Hz for most subwoofers. When the crossover frequency is below 100 Hz there usually is no stereo information present from the sound of the subwoofer, and a common subwoofer can be used. The sum switch on the crossover front panel causes the outputs of both low pass channel to be summed together. Both outputs will have the same summed signal on them, and either one can thus be used to drive he common subwoofer. The advantage of a common subwoofer is more than just cost. Because there is only one subwoofer present, often a larger unit can be chosen, with an extended bass range.

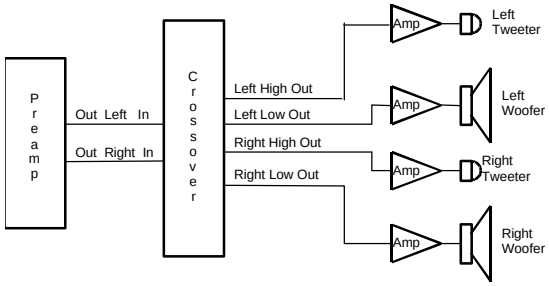

Figure 1
A typical 2-way system

It is also possible to drive more than two speakers per channel. A three-way crossover would be used to drive a system with woofers, midranges and tweeters.

Choosing the crossover frequency

At frequencies below the crossover frequency the signal will go to the low-pass outputs. At frequencies above the crossover frequency the signal will go to the high-pass outputs. There is a region around the crossover point where the signal will come out of both the high pass output and the low pass output. For the crossover networks with a slope of 24 dB/octave (XM6, XM9 and XM26) the width of this region is about 1/2 octave. For the XM16, with a slope of 48 dB/octave, the width of this region is halved to 1/4 octave.

Figure 2 shows the frequency response of the 24 dB/octave crossover networks (XM6, XM9 and XM26). The figure is drawn for a crossover frequency of 100 Hz. For other crossover frequencies the same figure applies, with the frequency scale scaled. Note that both the high-pass response and the low-pass response are down exactly 6 dB at the crossover point of 100 Hz. This means that at this frequency the amplitude is exactly half. Adding the high-pass and low-pass together sum to unity. As a matter of fact the sum of the high-pass and the low-pass response is unity for all frequencies. This is why the filter is called a “constant voltage” network. It is also called a Linkwitz-Riley network

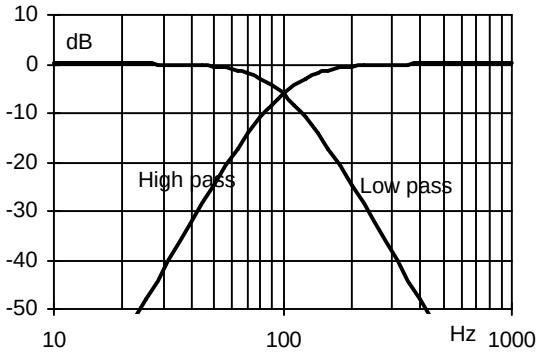

Figure 2
Fourth order frequency response of amplitude

The frequency response of the phase of the 24 dB/octave network is shown in figure 3. The frequency response of the phase is the same for the high-pass and the low-pass outputs. Note that at the crossover point the phase shift is exactly 180 degrees.

The choice of the crossover point is a difficult one, and often some trial and error is needed for achieving best results. With the 24 dB/octave crossover networks a good rule of thumb is to set the crossover point at least one-half to one octave away from the cutoff frequency of the speaker. Thus a satellite with a cutoff frequency of 50 Hz at the low and that is used with a subwoofer requires a crossover frequency of 75 to 100 Hz. The subwoofer should then also have a range extending half to one octave above the crossover frequency. In this case, if 100 Hz was chosen, the subwoofer should have a range of at least 200 Hz.

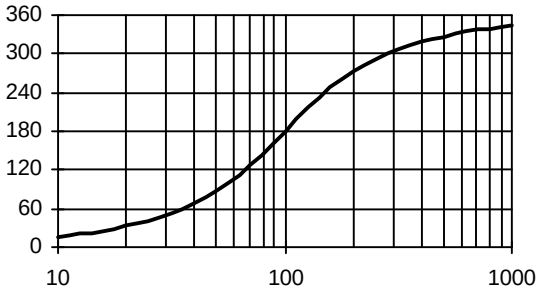

Figure 3
Fourth order frequency response of phase.

Level controls

The level controls on the front of the cabinet are used to set the volume of each loudspeaker for a proper match. There are several ways to adjust these controls. A good way to do this is to start out by setting all controls in the center (12 o'clock) position. Listen to some music and adjust the controls for proper volume from each speaker.
If a frequency generator is available, hook the generator up to the input of the crossover. Sweep the frequency from way below the crossover point to way above the crossover point. When the frequency crosses the crossover point the sound should shift from one speaker to the other, but the volume should remain the same.
A third way is to use a pink noise generator and a spectrum analyzer with a good microphone. Adjust the level controls for a flat response across the crossover point.
Sometimes the methods that use instruments result in settings that are not quite pleasing. If that is the case try to adjust the controls until the sound is best. After all, it is the final sound that is important.

The damping control

The damping control allows adjusting the frequency response at the crossover point. The damping control has maximum effect near the crossover frequency, and almost no effect far from the crossover frequency

Figure 4 shows the frequency response for the maximum and minimum settings. This control is only available on the XM6 and the XM9. The damping control adjusts both high pass and low pass simultaneously. This control is useful for fine-tuning the room frequency response. Sometimes it happens that at the crossover point there is a small peak or dip in the frequency response. This is caused by the fact that at this frequency the sound is produces by both high and low speakers simultaneously. It is often very hard to hear this dip, but it can easily be seen if a frequency spectrum analyzer is used.

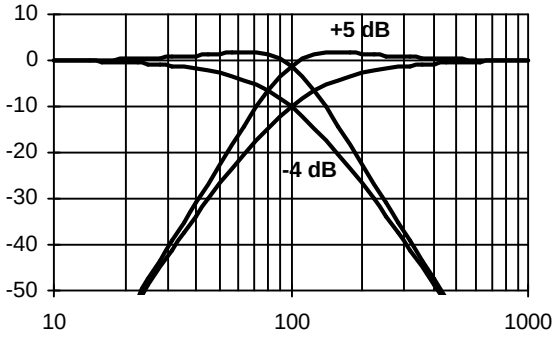

Figure 4
Effect of damping control

Most of our products are available as a kit or fully assembled. We also sell the boards only, either blank boards with manual, or as a kit. We use high quality parts only. Most resistors are 1% Metal Film, and the filters use pecision polypropylene capacitors. All connectors are gold plated.

Most devices are available with **attenuators** instead of potentiometers for the controls. Attenuators are more precise and have no audible distortion. **Balanced** inputs and outputs (XLR connectors) are also available on the crossovers

Check out our **EZ kits**. All kits are now available in the EZ version. The circuit boards in the easy kits are pre-assembled. This reduces the amount of soldering required to a minimum.

If needed, we can **help** with the assembly of a kit. We charge a nominal fee for labor and parts. The fee for helping you to assemble a kit will not exceed the price difference between kit and assembled. Please consult the factory if you need help.

All prices and specifications in this catalog are subject to change without notice.

All our products have a **warranty of two years** from the date of purchase. If they fail for any reason, just return the unit to us and we will fix it for free. We also have a customer satisfaction policy. If you are not happy with your purchase, just return it to us within 30 days of purchase, (kits unassembled) and we will send you a full refund.

We accept MasterCard, VISA, Discover, American Express, PayPal and Checks. In the USA we can also send packages COD. We usually ship within 2-3 weeks after receiving your order. We accept orders by phone, FAX or email.