CONFIGURING NON-EAW LIMITERS

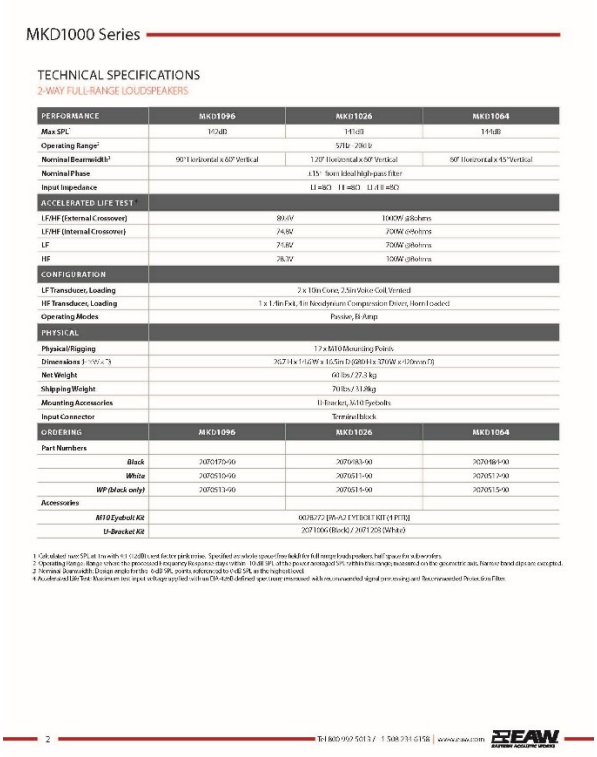
EAW Products are designed to perform their best using EAW electronics and signal processing within the Greybox settings. When EAW electronics and signal processing cannot be used, it is highly recommended to use the minimum FIR/IIR based processing designed for the specific product along with proper speaker protection. Since EAW cannot control the behavior or protection dynamics of third-party products, these instructions should be considered as a general guide and be aware it is the responsibility of the end-user or person configuring the system to protect the loudspeaker system from damage. EAW cannot be responsible for loudspeaker system damage using third-party products.

ITEMS NEEDED TO CONFIGURE LIMITERS

- Pink Noise Generator – This can be an industrial device designed specifically for pink noise measurement or a source such as a mixing console or pre-recorded sound files. It should have a crest factor of 12dB (which is typical of most Pink Noise sources).

- True RMS Multi-Meter – Such as a FLUKE 117. Many multi-meters can measure AC voltage. Make certain that it specifies it can measure true-RMS AC voltage.

- Model-Specific Loudspeaker Specifications – Each EAW spec sheet will designate values for "Accelerated Life Test". You will need these values (###Watts/#Ohms) to determine the correct protection voltage. Do not use any other values for determining limiter values.



MKD1000 Series

TECHNICAL SPECIFICATIONS

2-WAY FULL-RANGE LOUDSPEAKERS

PERFORMANCE	MKD1096	MKD1026	MKD1064
Max SPL[1]	142dB	141dB	141dB
Operating Range[2]	57Hz - 20kHz		
Nominal Beamwidth[3]	90° Horizontal x 60° Vertical	120° Horizontal x 60° Vertical	60° Horizontal x 45° Vertical
Nominal Phase	±15° from Ideal High-pass Filter		
Input Impedance	LF=8Ω HF=8Ω LF/HF=8Ω		
ACCELERATED LIFE TEST			
LF/HF (External Crossover)	89.6V	1000W @8ohms	
LF/HF (Internal Crossover)	74.9V	700W @8ohms	
LF	74.9V	700W @8ohms	
HF	28.7V	100W @8ohms	
CONFIGURATION			
LF Transducer, Loading	2 x 10in Cone, 2.5in Voice Coil, Vented		
HF Transducer, Loading	1 x 1.4in Exit, 4in Neodymium Compression Driver, Horn Loaded		
Operating Modes	Passive, Bi-Amp		
PHYSICAL			
Physical Rigging	12 x M10 Mounting Points		
Dimensions (HWD)	26.74in x 14.69in x 16.5in (680mm x 370mm x 420mm)		
Net Weight	60 lbs / 27.3 kg		
Shipping Weight	70 lbs / 31.8kg		
Mounting Accessories	U-Bracket, M10 Eyebolts		
Input Connector	Terminal Block		
ORDERING	MKD1096	MKD1026	MKD1064
Part Numbers			
Black	2070170-00	2070183-00	2070184-00
White	2070510-00	2070511-00	2070512-00
WP (black only)	2070513-00	2070514-00	2070515-00
Accessories			
M10 Eyebolt Kit	0078272 [PA-A2 EYEBOLT KIT (4 PCS)]		
U-Bracket Kit	2071006 (Black) / 2071208 (White)		

1. Calculated over SPL at 1m with +11.0dB crest factor pink noise. Specified as whole speaker bandwidth for full range loudspeakers, half space for subwoofers.
2. Operating range: Range where the processed frequency response stays within -10dB SPL of the pass-band at 50% within this range, measured on the geometric axis. Narrow band dips are excepted.
3. Nominal Beamwidth: Design angle for the -6dB SPL points, referenced to 0dB SPL at the highest level.
4. Accelerated Life Test: Maximum test input voltage applied as a non-EIA-426B defined spectrum (measured with recommended signal processing and Recommended Pulse Area Filter.

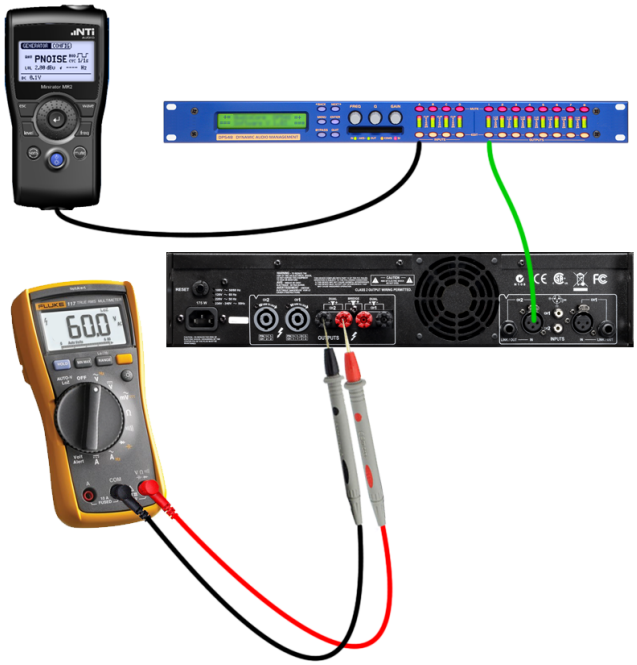
STEPS FOR CONFIGURING LIMITER SETTINGS

- First setup the system gain structure as required.
- Disconnect all loudspeakers from the amplifier! Do not connect any loudspeakers while setting limiters. This step is very important since there will be high-level signals sent through the system and damage to the loudspeakers will occur.
- Connect the RMS Volt meter to the speaker output terminals of the amplifier.
- Peak limiter can be 2x RMS threshold to provide 6dB crest factor.
- RMS and peak thresholds can be the same, though RMS can be slower by 2x-4x if desired.
    - The attack time is based on the LPF (20k in this case), so 0.3ms.
    - The release time is based on the HPF (63Hz in this case), so 256ms.
- Send pink noise through the system.
- Using the chart and formula below, raise the pink noise level until the meter measures RMS voltage just above the recommended value, approximately 2-3Volts.
- Reduce the threshold of the limiter until the RMS voltage measured is at or just below the recommended value.
- If the limiter supports attack/release values, use the table below to set them accordingly.

SQRT(WATTS*IMPEDANCE)*0.707

Accelerated Life Rating (WATTS)	Impedance	Set Limit Threshold to (Vrms)	Impedance	Set Limit Threshold to (Vrms)
100	8	20	4	14
150	8	24	4	17
175	8	26	4	19
200	8	28	4	20
250	8	32	4	22
300	8	35	4	24
350	8	37	4	26
400	8	40	4	28
450	8	42	4	30
500	8	45	4	32
600	8	49	4	35
750	8	55	4	39
800	8	57	4	40
900	8	60	4	42
1000	8	63	4	45
1100	8	66	4	47
1200	8	69	4	49
1500	8	77	4	55
1800	8	85	4	60
2000	8	89	4	63

Attack/Release Example:
If the HPF is 50Hz, use a release of 256ms
If the LPF is 2000Hz, use an attack of 0.5ms



WARNING!!! Amplifier connections produce high-voltages. Electrical shock or damage to the product can occur if handled improperly.

Attack (ms)	LPF or HPF	Release (ms)
45	31	720
16	63	256
8	125	128
4	250	64
2	500	32
1	1000	16
0.5	2000	8
0.3	22000	4