



## 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.

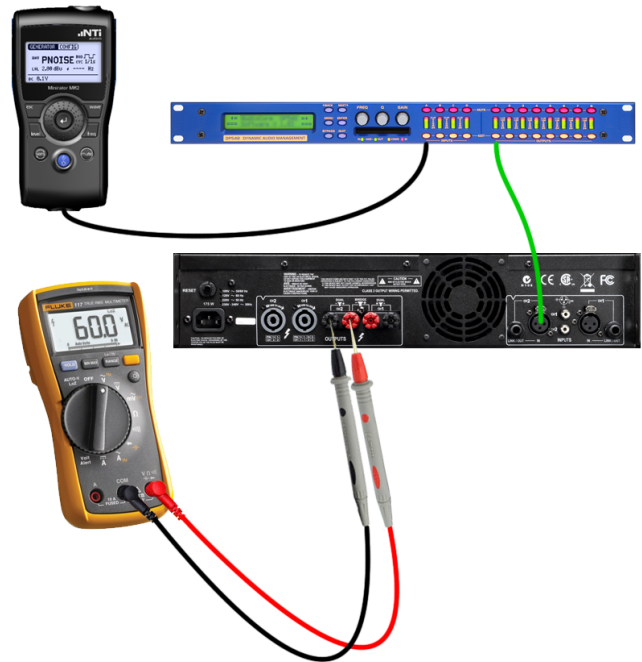
$$\text{SQRT}(\text{WATTS} * \text{IMPEDANCE}) * 0.707$$

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



## Where are the Tabular Processing Settings for My Loudspeaker?

If you are reading this, it is likely that you are looking for generic or “tabular” processor settings for an EAW loudspeaker model but have found this document instead. This means that tabular settings are not available for this product, for one of two reasons:

### REASON #1

This product is optimized for full-range operation and does not require processing (other than room EQ and perhaps a high-pass filter). To determine whether this is the case for your product, examine the Specification Sheet. In the following example, only a high-pass filter is required:

#### Operating Mode:

<i>Amplifier Channels</i>	<i>External Signal Processing</i>
Single-amp LF/HF	High pass filter

**Note:** Focused Greyboxes may be available for these products to further optimize performance, but they are not required for basic operation. To see if a Greybox is available, download the most recent Greybox library, which contains all released Greyboxes.

### REASON #2

This product requires Greybox processing. Tabular settings are not available because conventional EQ filters are not sufficient for optimal performance. In this case, the product’s Specification Sheet will indicate the following:

#### Operating Mode:

<i>Amplifier Channels</i>	<i>External Signal Processing</i>
Bi-amp (Passive MF/HF) LF, MF/HF	DSP w/EAW Focusing

## Why Does EAW Require Greybox Processing For Some Products?

To understand why EAW releases Greybox-only processing for some products, it is necessary to understand what a Greybox provides and why this cannot be replicated with third-party conventional processing. A Greybox provides the following critical features and functions:

1. *EAW Focusing™* – Proprietary impulse response corrections to eliminate horn “honk” and “smear”. This cannot be recreated with third-party processors using conventional parametric filters.
2. *Greybox Limiting* – Utilizing user input regarding amplifier gain and output capabilities, Greybox-enabled processors and amplifiers automatically calculate the correct limiter parameters for each passband of a loudspeaker.

3. *Gain Optimization and Alignment* – Like Greybox Limiting, Greybox-enabled processors and amplifiers automatically account for gain differences between passbands. This ensures correct crossover alignment and system tonality, even if amplifier gain varies from passband to passband (i.e. more gain on LF channels than on HF channels). EAW Pilot will alert users to situations where headroom is constrained due to low gain, or where system noise may be elevated due to high gain.

Because all three of these functions are integral to loudspeaker performance, EAW requires Greybox processing for premium-level products. For questions about your specific application and needs, please contact the Application Support Group.

### **What should I do now?**

If the product you wish to use is identified as requiring “DSP /w EAW Focusing” on the Specification Sheet, you have three options:

1. *Utilize a UX Series digital signal processor* – Per output channel, users can select whether to utilize conventional processing or load a Greybox.
2. *Utilize a Lab Gruppen PLM-Series amplifier* – One Greybox (up to 4 legs) can be loaded per PLM amplifier.
3. *Utilize a Powersoft K-Series amplifier with KDSP card installed* – One Greybox leg can be loaded per channel.

All three of the above platforms can natively load and implement EAW Focusing™ for Greyboxes that include it (indicated by a “GF” in the Greybox file name).