TAC-350、800、1200、2000
时控电子分频器安装手册

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TAC系列时控电子分频器安装手册

（TAC350、800、1200、2000，分频点分别为350、800、1200、2500Hz）

TAC 系列(时控电子分频器)是一种专门用于影院的多声道电子分频器。该产品具有其它同类产品所没有的独特功能。

TAC 系列用于影院电影主扬声器的 3 条声道。其工作电压为220-240V 50Hz 。每个声道都有自己的高频/扬声器驱动器时控要求，并依照低频扬声器进行声音调制。尽管在影院中使用同一舞台扬声器也能取得立体声效果，但是没有类似型号的机器能够进行调节，而且每一个声道也不能单独进行时间调整。

大多数主要的扬声器生产商提供的新型恒定指向性扬声器都能很好地控制它们的幅射角。直到 20 世纪 60 年代早期，用于影院的扬声器的幅射角都是随频率而下降的。在切换频率上，一个幅射角为 40 度的扬声器可能达到 90 度，但随着频率的增高其幅射角可能降低到 10 度以下。你只能在扬声器的轴心上才能听到它的高频声音.

新型的恒定指向性扬声器能在整个高频段很好地控制它们的幅射角。由于幅射面非常宽广，高频部分分布的区域也更广，能量趋于分散，声压级有所衰减，因此，与低频部分相比声音听起来显得较低。TAC 系列配备了恒定指向性扬声器补偿装置。与在 800Hz（1200Hz）的切换频率上声压级相比，10KHz 以上稳定的高频提升可达 12dB。这种高频放大功能对于影院非常有用，因为在高频部分所出现衰减现象。加上恒定指向性扬声器调节装置后，对实现均衡会更容易，其中 TAC-800 的每一个声道的切换频率是 800Hz（1200Hz），这是二分频电影主扬声器的最佳频率并得到美国电影艺术科学技术学院标准委员会的推荐，它的切换斜率是每八度 24dB.这样即可实现低频和高频声音的完美交融，24dB 斜率在音量很大的时候为高频驱动器提供最大限度的保护。

什么是时控?

当一个二分频扬声器在(或接近)切换频率重复产生一个音符时，高频和低频都在该频率工作.因为高频驱动器在物理上不能与低频低音扬声器进行调节，所以听众是先听到高频的声音,稍后才能听到低频低音扬声器产生的声音。在这一频段两个扬声器所产生的声音互相抵消或重叠，使声音听起来混沌不清。如果低频驱动器能在电子控制下使音符的产生精确延迟一段时间，使其与高频低音扬声器发声的时间一致。两个声音在混响阶段便能产生一个清晰悦耳的和声。

安装:

1、将 TAC 系列分频器置于机箱中，使其接近功率放大器。安装的理想位置是，使用最短连线即可连接分频器的输出端口和功率放大器的输入端口。

2、分频器的左、中、右声道三个输入端口均为卡侬头（XLR）插口，将立体声处理器左、中、右声道三个声道的输出接到分频器的每个对应输入端口上，卡侬头“1、2、3” 按平衡接法分别与立体声处理器“地、正、负”相接。

注意：分频器的输出端口和高低频功率放大器的输入端口绝对不可接错，如果将低频接到高频上可能烧坏高频驱动器。

3、给电子分频器留出足够的空间以利通风.切勿在不安放通风隔板的情况下将分频器置于两台功率放大器之间。

注意：220V 电源必须使用三芯电源线，并可靠接地，否则将会引入交流噪声。

调试

如果使用同一型号的扬声器，应根据同样的电子分频器对所有的声道进行调整。（以左路声道调试方法为例）

1、关闭功率放大器。

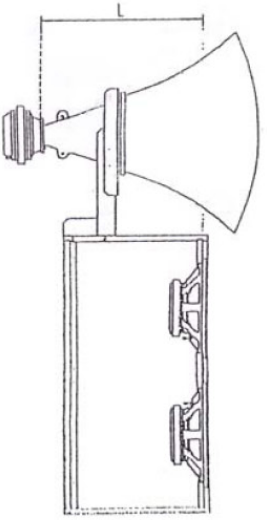
2、用一根尺子测量从低音扬声器声音线圈到高频驱动器之间的距离。据此推算出需要延迟的时间。参照表 1 可以决定分频器每个频道跳线的最佳切换设置

3、向分频器的左路声道输入粉红噪声信号。使其输出功率应在 05-1V 之间。

4、将信号馈入左路低频功率放大器（为方便起见，将音量顺时针开至最大）与高频功率放大器。在分频器上有一个高频增益控制器用于平衡放大器在高频和低频频道之间的增益。为方便起见，可将高频功率放大器音量控制纽顺时针开至最大并使用分频器高频增益控制器设置高频。

5、为取得最好的高、低频平衡状态，可将低频输出信号确定后（85dB），可一边观察影院中实时分析器的反应，一边调整高频增益控制器，使高频频段 800Hz（1200Hz、2500Hz）切换频率处的声压级与该处低频频段的声压级相同，此时不必在意其它的音频频段。

注意：为使噪音降至最小，TAC 系列分频器在设计中 具有 12dB 的增损值，可允许 0.5-1V 的高值输入信号。分频器具有 3 毫秒的延时值。进行物理时间调节时必须同时调整高频扬声器和低频驱动器。



开关位置	延迟角度	声学距离 L(cm)
1	180	30
2	270	45
3	360	60
4	450	75
5	540	90

INSTALLATION AND SETUP MANUAL

TAC Series Time-Controller Active Crossover

(TAC350、800、1200、2000,
the crossover frequency is 350、500、1200、2500Hz respectively)

The TACseries (Time-Corrected Active Crossover) is a multi-channel electronic crossover designed specifically for cinema use. This product contains features not found in other products of its type.

The TACseries contains three identical crossover channels for the stage speakers, along with its own AC power supply that can operate from 220-240VAC50/60Hz line voltages. Each channel has its own adjustment for time correction of the high frequency/horn driver to align acoustically with the low frequency woofer(s). Although it is desirable to use identical stage speakers for stereo in an auditorium, non-similar types can be accommodated and the time correction for each channel can be individually adjusted.

The new constant directivity horns offered by most major loudspeaker manufacturers hold their hold their published dispersion patterns very nicely. Early design horns used in cinemas until the early 1960's very very beamy. A horn may have a 90 degree by 40 degree pattern at the crossover frequency, but as the frequency tone went up, the pattern could narrow as low as 10 degree. You could only hear HF tones directly on-axis of the horn.

New CD horns can hold their pattern throughout the high audio frequency range. Because the pattern is so wide, the higher frequencies are spread over a bigger field and appear not to be as loud as their lower counterparts. The TAC-series has CD horn compensation built in. The smooth high frequency boost is up 12 dB at 10kHz from the crossover frequency of 800Hz（1200Hz）. The crossover chart below (figure 1) shows the high frequency boost levels off at 10kHz. This is high frequency boost is valuable for movie theatres because of screen attenuation losses at high frequencies. Equalization is easier and smoother with the CD horn correction added. The crossover frequency of each channel of the TAC-800 is 800Hz（1200Hz）. This is the optimum frequency for 2-way stage loudspeakers and agrees with the Academy of

Motion Picture Arts and Sciences Technical Standards Commission recommendations. The crossover slope is 24 dB per octave to provide a smooth blend of sounds from the low and high frequency components. The steep 24 dB slope also provides maximum protection for the high frequency driver during loud sound passages.

What is Time Correction?

When a 2-way speaker reproduces a note at (or near) the crossover frequency, both the HF and LF speakers are working at that frequency. Because the HF driver cannot be physically aligned with the LF woofer, the HF sound arrives at the listener's ears slightly behind the sound created by the LF woofer. This creates a muddy, confused sound as frequencies in the range where both speakers operate fight each other causing cancellation and addition of the reproduced notes. If the LF driver is electrically delayed the precise amount of time it takes a note to travel to the listener as the HF note, the two sounds combine acoustically in phase and produce a clear, transparent sound throughout the crossover region.

INSTALLATION

1.Mount the TACseries frequency divider in the equipment rack where it is in proximity to the power amplifiers. An ideal location is where the frequency divider output leads can easily reach the inputs of the power amplifiers with a minimum run of cable.

2. Crossover left, middle and right sound track three input port is card agriculture (XLR) the receptacle, receives on frequency divider's each corresponding input port the stereo sound processor left, middle and right sound track three sound track's outputs, card agriculture head "1, 2, 3" according to balanced connection separately with stereo sound processor ", plus and minus" docking.

NOTE: to make sure the LF outputs arrive at the LF amplifier inputs. Reversing the LF and HF signals can cause damage to the HF drivers.

3. Allow ventilation space for the electronic crossover. It is not good practice to wedge the crossover between two power amplifiers without vent panels separating the units.

NOTE:*220V source of power must be 3-wire grounded line cord .*

CALIBRATION

All channels should be set to the same time correction setting when using identical model speakers. (take left channel for example)

1. Turn off the power amplifier.

2.With a ruler, measure the distance from the point where the voice coil of the woofer is to the voice coil/diaphram of HF driver is located. This is the time offset between the two components. Refer to the chart figure 1 to determine the best setting of the jumper "shunts" for each channel of the *crossover.*

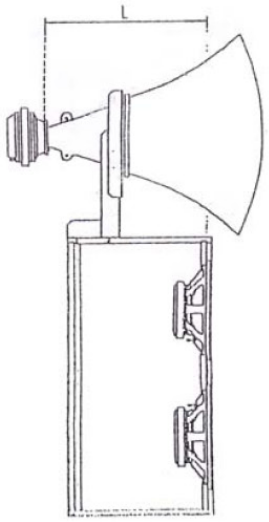
3.Feed pink noise into the left channel input. Input should be about 0.5 to 1 volt.

4.Feed the signal into the left LF power amplifier (for convenience set the volume fully clockwise). On the *crossover* there is a high frequency level attenuator to balance the amplifier gains between high and low frequency channels. For convenience, set the HF power amplifier volume control fully clockwise and use the *crossover* attenuator to set the high frequency level.

5.With pink noise playing adjust the HF level control for the smoothest crossover while observing the response on a real time analyzer set up to monitor the auditorium after setting the LF output signal (85dB). The levels should be set to match at the crossover frequency of 800Hz

（1200Hz、2500Hz）. Do not be concerned with the level of the other parts of the audio spectrum at this time.

NOTE: *To minimize noise, the Series of crossover were designed with a 12dB gain loss necessitating a high level input signal of 0.5-1 volt. On the crossover there are 3 ms fixed time delay. Time alignment adjustments must be made by physically moving the high frequency horn in relation to the low frequency driver.*



Position Number	Delay By Degrees	Acoustic Distance L(cm)
1	180	30
2	270	45
3	360	60
4	450	75
5	540	90