CDT Audio introduces the MX1000 - (Ultra-flexible)
2/3-way compact
Mid-woofer E.Q. crossover

Finally, we have created a second compact economical solution to the installation of a front-mounted 3-way system for the general market. This incredibly flexible module will also act as a 2-way crossover. This unit is specifically oriented to very small 2~3 inch midrange drivers.

This crossover module offers interactive crossover to and adjustability of the mid-range and tweeter and a conventional second order or high-tech elliptic filter to crossover the tweeter.

New and unprecedented functionality in this unit is highlighted by a dual-order, tweeter crossover.

Designed to produce a crossover to the midrange around 1500 Hz with virtually any woofer and a two or three-inch midrange in a typical installation, this crossover produces amazing results with maximum flexibility and compactness in a very tight installation.

The woofer's proprietary tapped inductor selects three different values to provide two different crossover frequencies for a range of woofers or mid-woofers.

The midrange level is adjusted to six different levels to blend optimally or in case you want to crossover to the tweeter directly using a mid-woofer the midrange function can be jumped out – just rotate the jumper. The tweeter also has a tapped inductor to control EQ for the best power response in the installation.

This most flexible approach will produce the best sound in most installations and will implement almost any installation.

Choose the mounting position and select the drivers to accommodate your vehicle and to facilitate a natural sound. A very small, extended midrange speaker can be selected to augment the tweeter response especially if a high mounting position is chosen for the tweeter.

The midrange is allowed to crossover to the tweeter based on the midrange's natural character.

Tweeter crossover is accomplished with either a fast fifth-order elliptic that brings in the tweeter quickly and invisibly to complement a broad variety of tweeters and midrange drivers in most locations or if a particular installation requires it a slower second-order transition is also available.

Crossover will typically be achieved around 3~5 kHz in 5^{TH} order mode depending on driver selection and relative mounting position. 2^{nd} order mode with directed extended-range midrange speakers can raise the crossover to produce a blend up to 10 kHz.

Three-way configurations will create an installation that gives the smoothest midrange, the most flexibility in mounting the drivers for a smooth blend and finally gives the best impact.

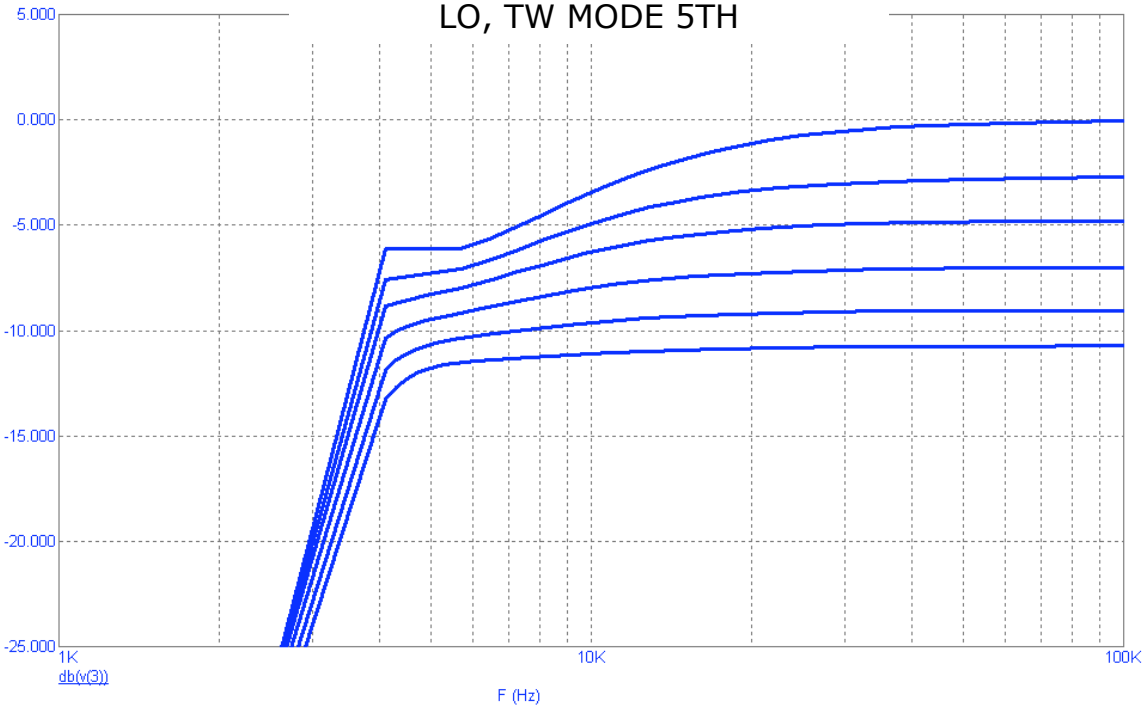
The small midrange drivers used in this system require minimal enclosure volume and can be located in the most densely occupied locations.

Installation of this unit is an adventure in a world of possibilities and custom control.

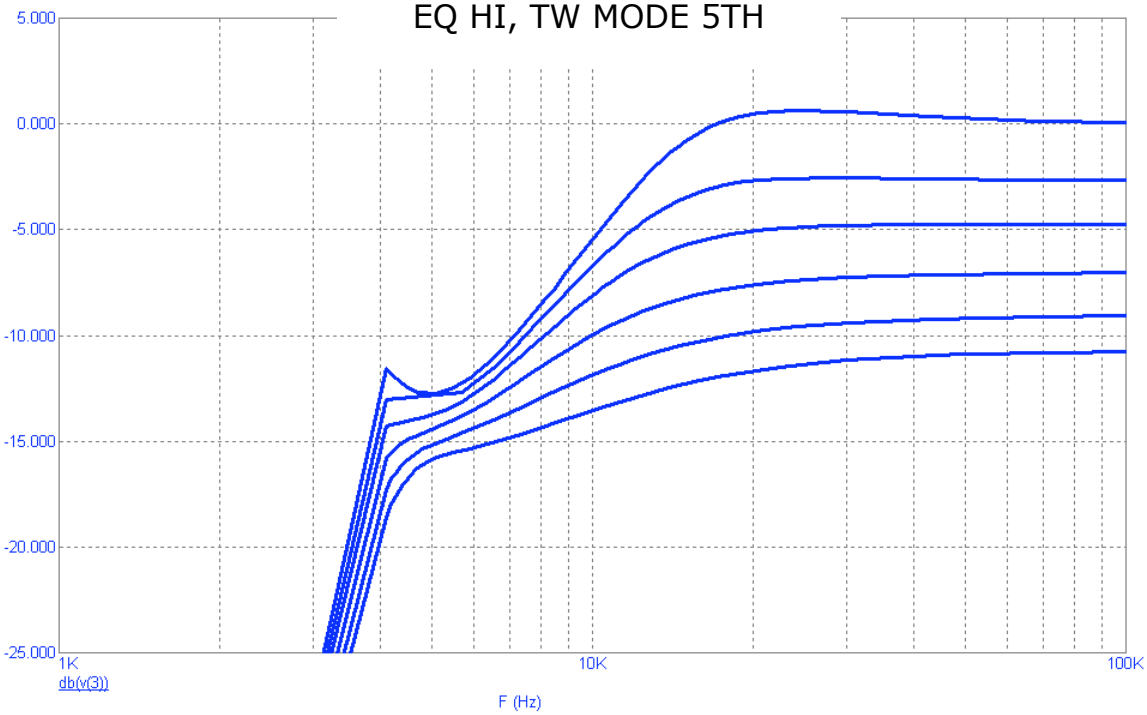
The following charts show what you can do with this device and these functions can be used singly or combined.

The EQ can be low for a flatter frequency response or high for a flatter power response. This depends on where the tweeters are mounted. EQ set to high accommodates indirectly aimed mountings.

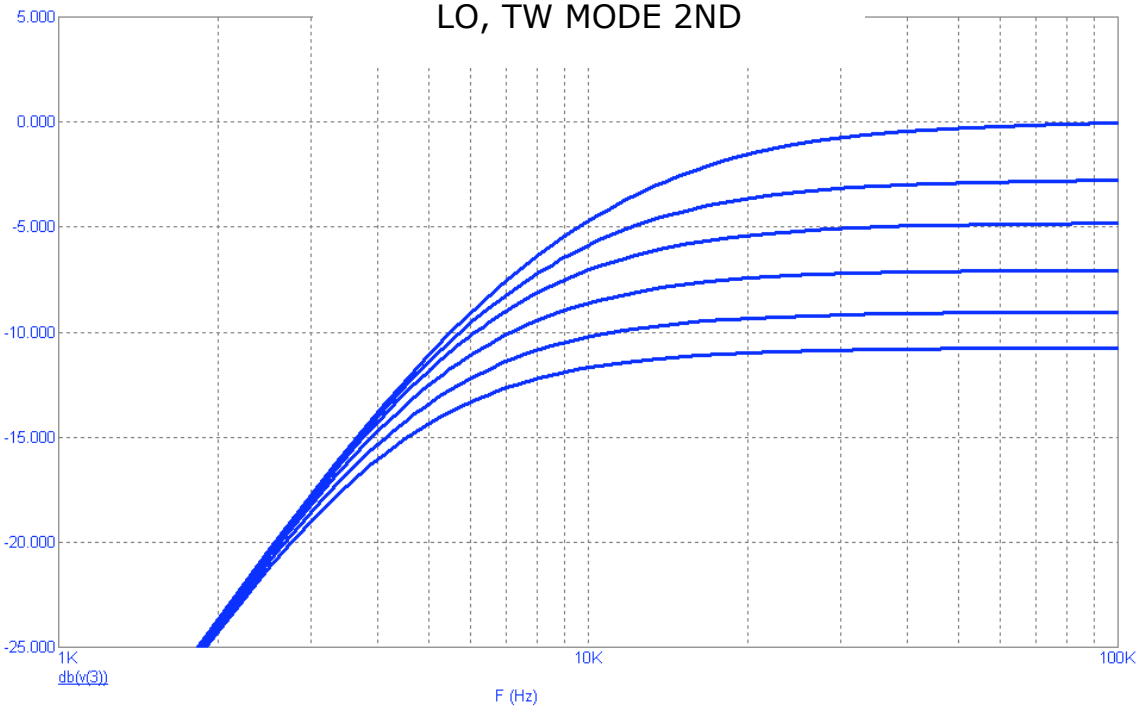
Tweeter level settings – TW EQ LO, TW MODE 5TH



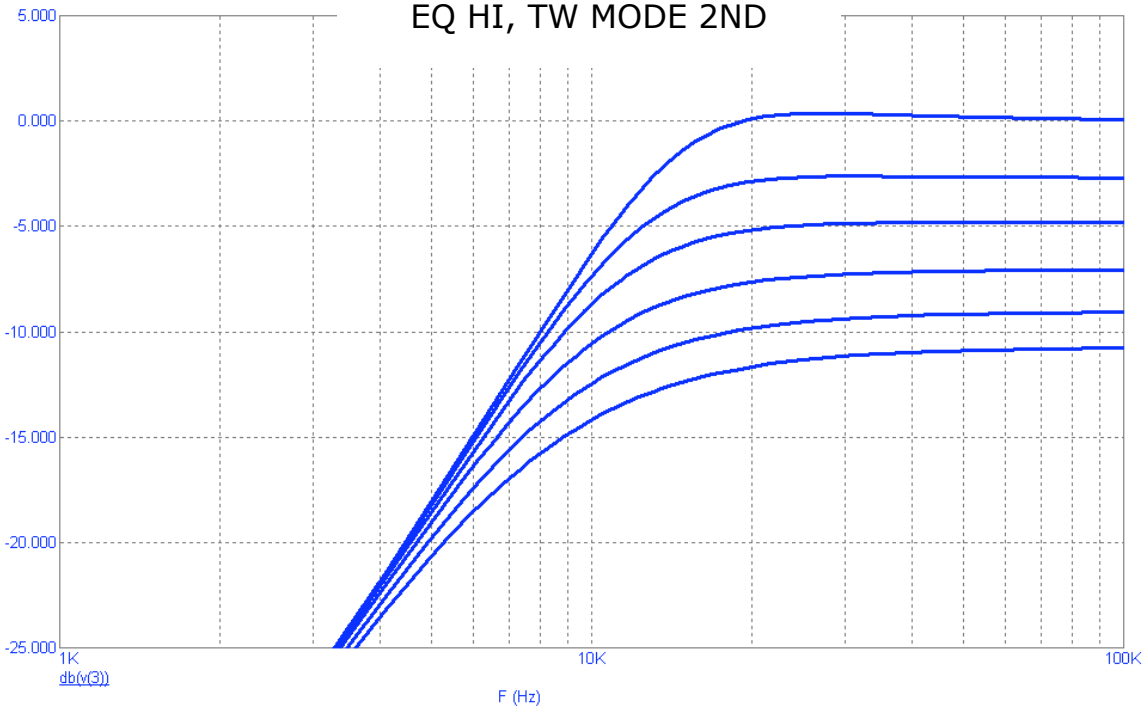
Tweeter level settings – TW EQ HI, TW MODE 5TH



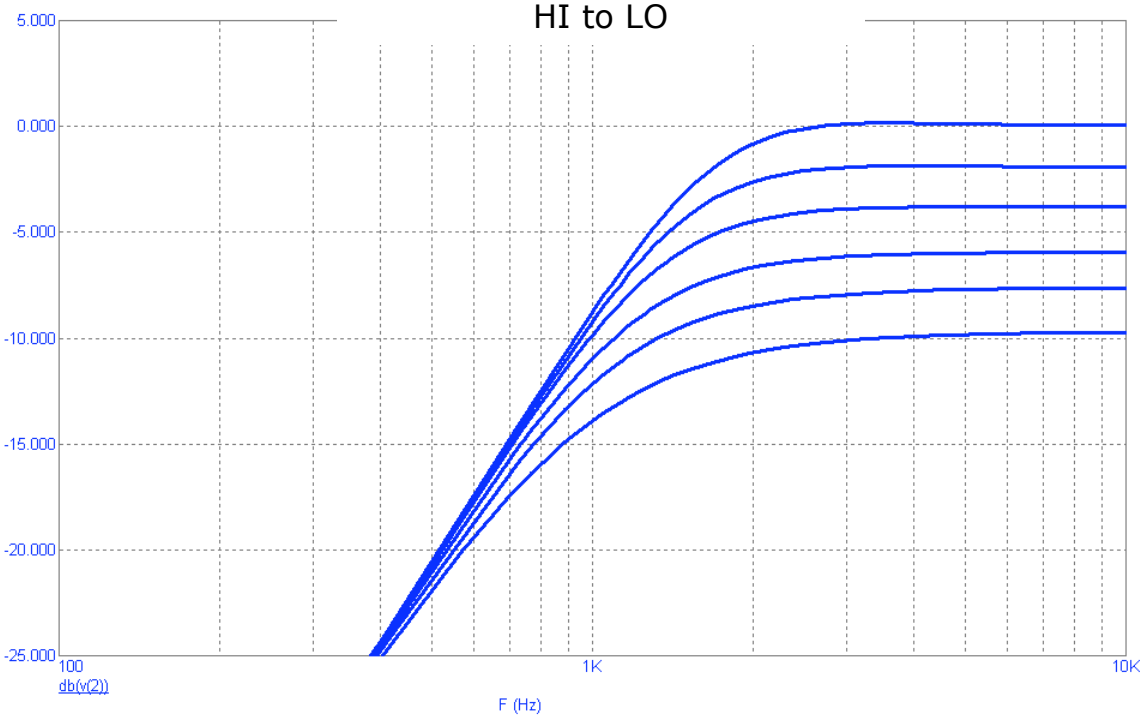
Tweeter level settings – TW EQ LO, TW MODE 2ND



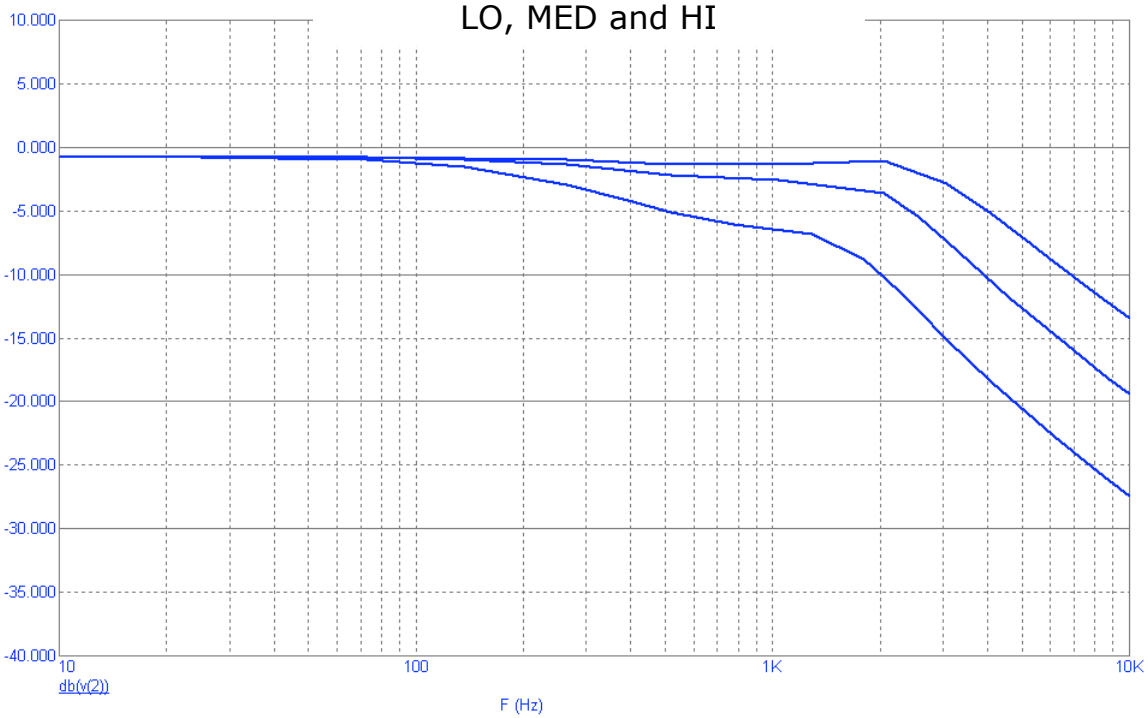
Tweeter level settings – TW EQ HI, TW MODE 2ND



Midrange Level Settings
HI to LO



Woofer Crossover Frequencies
LO, MED and HI



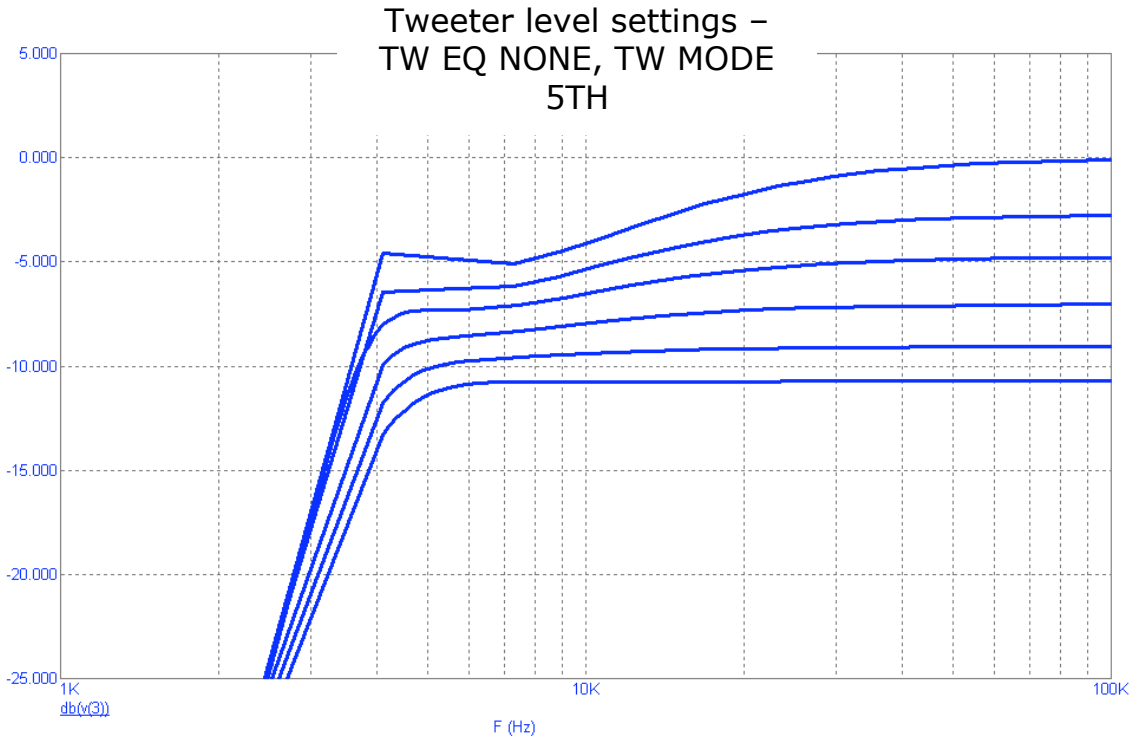
NOTE:

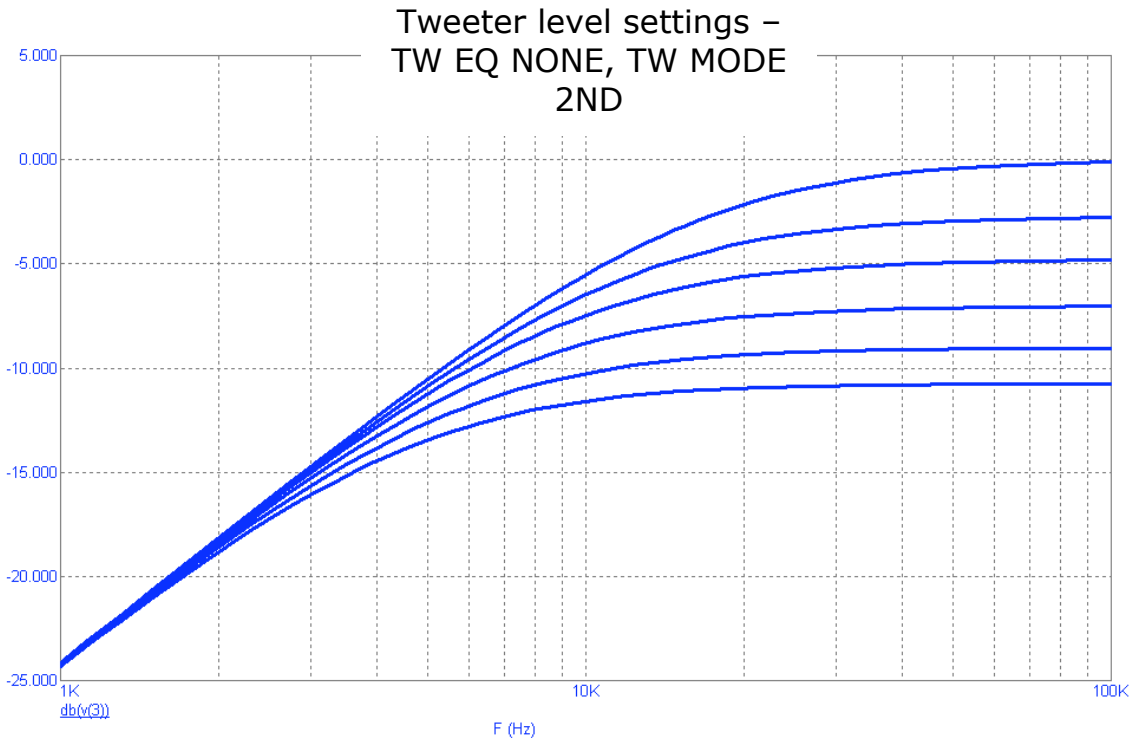
Rotate the jumper in any woofer/midrange/tweeter section to delete that function. The driver if connected to the following will mute when the jumper is removed or rotated.

Woofer – X FREQ
MID LEVEL
TW LEVEL

If a particular driver is not to be used the rotated orientation is correct. This does not apply to the EQ and MODE sections. The EQ section jumper may be set to "none" by placing it over just one pin. The MODE position marked 2ND is the same as removing the jumper.

The effect of selecting "none", as described above, in the EQ section and on the tweeter responses is shown below.





Operation of the MX1000

The MX1000 will perform a host of separate or combined crossover functions. Any driver may be left unused by rotating the jumper from sideways to vertical to remove that driver from the amplifier as described above. The MODE function can also be operated in the "none" position.

The levels of the midrange and tweeter can be adjusted by attenuation over approximately a 10db range. The midrange crossover is approximately 1kHz high pass and the low pass is left to the driver's natural roll-off in whatever is the particular mounting position – it runs all the way up. The tweeter crossover can be set to approximately 4kHz for two-way operation or 8kHz for three-way use with small midrange drivers generally 2~3inch size but 4 inches is also useable. Various contours between these two frequencies and some very gradual blends are also available. Tweeters require some EQ in almost all cases so the actual acoustic crossover can occur lower in frequency than the crossover setting. This is especially true for gradual slopes.

Summarizing from the graphical curves the following amplitudes and frequencies can be estimated. The woofer and midrange settings are relatively straightforward. The tweeter gains can be modulated or shaped by different settings of the MODE and EQ jumpers.

Jumper: WFR X FREQ
LO: 500Hz first order to 2kHz and second order above 2kHz
MED: 2kHz second order
HI: 3.5kHz second order

Jumper: MID LEVEL
HI: (position1) – crosses over at 1.5kHz second order with 0dB attenuation above 4kHz
Position 2 – crosses over at 1.3kHz second order with 2dB attenuation above 4kHz
Position 3 – crosses over at 1.25kHz second order with 4dB attenuation above 4kHz
Position 4 – crosses over at 1.2kHz second order with 6dB attenuation above 4kHz
Position 5 – crosses over at 1.1kHz second order with 8dB attenuation above 4kHz
Position 6 – crosses over at 1.0kHz second order with 10dB attenuation above 4kHz

Jumper: TW LEVEL (TW MODE –2nd, TW EQ-HI)
The crossover slope and driver characteristics will result in a lower acoustic crossover frequency than the numbers below – typically 0.7 times lower.
HI: (position1) – crosses over at 12kHz second order with 0dB attenuation ref. 20kHz
Position 2 – crosses over at 11kHz second order with 2dB attenuation ref. 20kHz
Position 3 – crosses over at 10kHz second order with 4dB attenuation ref. 20kHz
Position 4 – crosses over at 10kHz second order with 6dB attenuation ref. 20kHz
Position 5 – crosses over at 10kHz second order with 8dB attenuation ref. 20kHz
Position 6 – crosses over at 10kHz second order with 10dB attenuation ref.20kHz

Jumper: TW LEVEL (TW MODE –5th, TW EQ-HI)
This setting gives a combination crossover that is 5th order below 4kHz and varies as listed for each attenuation setting. The crossover will acoustically occur between the 5th order frequency and the –3dB frequency.
HI: (position1) – crosses over at 4kHz 5th order and 12kHz 1st order, 0dB attenuation ref. 20kHz
Position 2 – crosses over at 4kHz 5th order and 11kHz 1st order, 3dB attenuation ref. 20kHz
Position 3 – crosses over at 4kHz 5th order and 10kHz 1st order, 5dB attenuation ref. 20kHz
Position 4 – crosses over at 4kHz 5th order and 9kHz 1st order, 7.5dB attenuation ref. 20kHz
Position 5 – crosses over at 4kHz 5th order and 7kHz 1st order, 10dB attenuation ref. 20kHz
Position 6 – crosses over at 4kHz 5th order and 7kHz 1st order, 12dB attenuation ref. 20kHz

Jumper: TW LEVEL (TW MODE –2nd, TW EQ-LO)
The crossover slope and driver characteristics will result in a lower acoustic crossover frequency than the numbers below – typically 0.7 times lower.
HI: (position1) – crosses over at 10kHz second order with 2dB attenuation ref. 20kHz
Position 2 – crosses over at 8kHz second order with 3.5dB attenuation ref. 20kHz
Position 3 – crosses over at 7 kHz second order with 5.5dB attenuation ref. 20kHz
Position 4 – crosses over at 6.5kHz second order with 7.5dB attenuation ref. 20kHz
Position 5 – crosses over at 6kHz second order with 9.5dB attenuation ref. 20kHz
Position 6 – crosses over at 5.5kHz second order with 11dB attenuation ref.20kHz

Jumper: TW LEVEL (TW MODE –5th, TW EQ-LO)
This setting gives a combination crossover that is basically 5th order below 4kHz and varies as listed for each attenuation setting. The crossover will acoustically occur close to the 4kHz frequency except the higher gains offer some EQ that could raise the crossover slightly to perhaps 5~6kHz in the two highest gains. This is the typical two-way elliptic crossover.

HI: (position1) – crosses over at 4kHz 5th order and 6kHz 1st order, 1.5dB attenuation ref. 20kHz
Position 2 – crosses over at 4kHz 5th order and 5kHz 1st order, 3dB attenuation ref. 20kHz
Position 3 – crosses over at 4kHz 5th order, 5dB attenuation ref. 20kHz
Position 4 – crosses over at 4kHz 5th order, 7.5dB attenuation ref. 20kHz
Position 5 – crosses over at 4kHz 5th order, 9dB attenuation ref. 20kHz
Position 6 – crosses over at 4kHz 5th order, 11dB attenuation ref. 20kHz

Jumper: TW LEVEL (TW MODE –2nd, TW EQ-"none")
The crossover slope (1st order) and driver characteristics will result in a lower acoustic crossover frequency than the numbers below – typically 0.5 times lower. This offers a very gradual slope to tweeters with ferrofluid or others with a flat impedance curve.
HI: (position1) – crosses over at 10kHz second order with 2dB attenuation ref. 20kHz
Position 2 – crosses over at 9kHz second order with 4dB attenuation ref. 20kHz
Position 3 – crosses over at 7 kHz second order with 5.5dB attenuation ref. 20kHz
Position 4 – crosses over at 6kHz second order with 7.5dB attenuation ref. 20kHz
Position 5 – crosses over at 5kHz second order with 9dB attenuation ref. 20kHz
Position 6 – crosses over at 4.5kHz second order with 11dB attenuation ref.20kHz

Jumper: TW LEVEL (TW MODE –5th, TW EQ-"none")
This setting gives a combination crossover that is basically 4th order below 4kHz and varies as listed for each attenuation setting. The crossover will acoustically occur close to the 4kHz frequency except the higher gains offer some EQ that could raise the crossover slightly to perhaps 5~6kHz in the two highest gains. This resembles the EQ-LO, MODE-5th response but rolls off more gradually below 4kHz.
HI: (position1) – crosses over at 4kHz 5th order and 6kHz 1st order, 1.5dB attenuation ref. 20kHz

Position 2 – crosses over at 4kHz 5th order and 5kHz 1st order, 3dB attenuation ref. 20kHz
Position 3 – crosses over at 4kHz 5th order, 5.5dB attenuation ref. 20kHz
Position 4 – crosses over at 4kHz 5th order, 7dB attenuation ref. 20kHz
Position 5 – crosses over at 4kHz 5th order, 9dB attenuation ref. 20kHz
Position 6 – crosses over at 4kHz 5th order, 11dB attenuation ref. 20kHz