

## CHAPTER 13

# Pultec and Pultec-Pro

### Overview

The Pultec EQP-1A Program Equalizer and Pultec MEQ-5 plugins are faithful electronic reproductions of the classic hardware equalizers. Our DSP wizards have ensured that every revered sonic nuance of these vintage processors are faithfully maintained.

#### UAD Pultec and UAD Pultec-Pro

The UAD Pultec plugin is the EQP-1A Program Equalizer that was introduced in version 2.2 to much acclaim. UAD Pultec-Pro was introduced in version 3.5, and includes both the EQP-1A and MEQ-5 modules. The EQP-1A is identical in UAD Pultec and UAD Pultec-Pro.

In designing the Pultec equalizer plugins, we performed detailed analyses of the signal path and equalization characteristics of selected well-maintained, in-spec Pultec equalizers used regularly in professional studios. A “golden unit” was selected, and the resulting model reproduces the measured equalization and signal path characteristics to within a fraction of a dB mean error for all knob settings.

All of the unique features of the original Pultec EQ’s are included in the plugins, including the separate boost and attenuation controls, the smooth, sweet top end, and the ability to dial in seemingly dangerous amounts of boost without getting into trouble. All front panel controls are included, and all of the knob tapers are accurately modeled. The Pultec has long been a choice of recording and mastering engineers for its ability to bring out individual frequency ranges without significantly altering other frequencies. In addition, the Pultec is one of those magical pieces of gear that makes audio program sound better just by passing through it. The sophisticated modeling technology used in the Pultec plugins captures both of these key attributes.

**Note:** *The Pultec and Pultec-Pro plugins always operates at a high internal sample rate for maximum accuracy. Therefore, the UAD DSP load does not increase even when processing audio at the highest sample rates.*

## Pultec Latency

The Pultec and Pultec-Pro plugins introduce an additional 13 samples of delay due to upsampling when the session sample rate is below 100kHz. This additional latency does not occur at sample rates above 100kHz. You may enter a value of 13 in the “Samples” parameter in DelayComp or TrackAdv to compensate. See “Compensating for Pultec EQ” on page 51 for more information.

**Note:** Compensating for Pultec and Pultec-Pro is not required if the host application supports full plugin delay compensation throughout the signal path, or when it is used on outputs. See “Host PDC Implementation” on page 46.

## Pultec EQP-1A Screenshot



Figure 65. The Pultec EQP-1A Program Equalizer plugin window

## Pultec EQP-1A Controls

The EQP-1A can control three frequency ranges simultaneously, using three groups of interacting parameters.

The first group controls the low frequencies and has three controls: boost, attenuation, and frequency select. The second group controls the high frequencies and has three controls: boost, bandwidth, and frequency select. The third group also controls the highs and has two controls: attenuation amount and frequency select.

The placement and grouping of the sections and their related controls are shown in [Figure 66 on page 172](#).



Figure 66. Control grouping within the Pultec EQP-1A

### In/Out Toggle Switch

This is a signal bypass control. It allows you to compare the processed and un-processed signal. It does NOT reduce UAD DSP load.

In the hardware EQP-1A, the audio is still slightly colored even when the switch is in the Out position. This is due to the fact that the signal is still passing through its circuitry. Because the plugin emulates the hardware in every regard, the signal will be slightly processed when this switch is in the Out position. If a true bypass is desired, use the On/Off rotary switch.

### On/Off Rotary Switch

This switch enables or disables the EQP-1A altogether. You can use this switch to compare the processed settings to that of the original signal, or to bypass the plugin to reduce UAD DSP load.

## Low Frequency Controls

### CPS Selector Switch

This switch determines the frequency of the low shelf portion of the equalizer. CPS is an acronym for Cycles Per Second (Hertz). Four frequencies are available: 20, 30, 60, and 100 Hertz.

### Boost Knob

This knob determines the amount of low shelf gain to be applied to the frequency set by the CPS switch.

### Attenuation Knob

This knob determines the amount of low shelf cut to be applied to the frequency set by the CPS switch.

**Note:** In the documentation supplied with hardware version of the EQP-1A, it is recommended that both Boost and Attenuation not be applied simultaneously because in theory, they would cancel each other out. In actual use however, the Boost control has slightly higher gain than the Attenuation has cut, and the frequencies they affect are slightly different too. The EQ curve that results when boost and attenuation are simultaneously applied to the low shelf is an additional feature.

## High Frequency Controls

### KCS Selector Switch

This switch determines the frequency of the high boost portion of the equalizer. KCS is an acronym for KiloCycles per Second (kiloHertz). Seven frequencies are available (all in kiloHertz): 3, 4, 5, 8, 10, 12, and 16.

### Bandwidth Knob

This knob sets the proportion of frequencies surrounding the center frequency (determined by the KCS switch) to be affected by the high boost. This is a 'Q' control. Lower values yield a narrower band and effect fewer frequencies.

### Boost Knob

This controls sets the amount of gain for the high frequency portion of the equalizer.

## High Attenuation Controls

### Attenuation Selector Switch

This switch determines the frequency of the high frequency attenuator. Three frequencies are available (all in kiloHertz): 5, 10, and 20.

### Attenuation Knob

This knob determines the amount of high shelf cut to be applied to the frequency set by the Attenuation Selector switch.



## Pultec MEQ-5 Screenshot



Figure 67. The Pultec-Pro MEQ-5 Midrange Equalizer plugin window

## Pultec MEQ-5 Controls

The MEQ-5 can control three frequency ranges simultaneously, using three groups of interacting parameters.

The first group controls the low-mid frequencies and has two controls: frequency select and boost. The second group controls the mid frequencies and has two controls: frequency select and attenuation. The third group controls high-mids and has two controls: frequency select and boost.

The placement and grouping of the sections and their related controls are shown in [Figure 68](#).



Figure 68. Control grouping within the Pultec-Pro MEQ-5

### On/Off Toggle Switch

This switch disables the MEQ-5 portion of Pultec-Pro. It allows you to compare the processed and unprocessed signal of the MEQ-5. When in the out position, the UAD DSP load is reduced.

In the hardware MEQ-5, the audio is still slightly colored even when the switch is in the Out position and the peak/dip controls are at zero. This is due to the fact that the signal is still passing through its circuitry. Because the plugin emulates the hardware in every regard, the signal will be slightly processed when this switch is in the In position and the peak/dip controls are at zero. If a true bypass is desired, use the host disable switch.

## Low Peak Controls

**Frequency Selector Switch** This switch determines the frequency of the low-midrange portion of the equalizer. Five frequencies are available: 200Hz, 300Hz, 500Hz, 700Hz, and 1kHz.

**Boost Knob** This knob determines the amount of low-midrange “Peak” (gain) to be applied to the frequency set by the low-midrange frequency selector.

## Dip Controls

**Frequency Selector Switch** This switch determines the frequency of the midrange portion of the equalizer. Eleven frequencies are available: 200Hz, 300Hz, 500Hz, 700Hz, 1kHz, 1.5kHz, 2kHz, 3kHz, 4kHz, 5kHz, and 7kHz.

**Attenuation Knob** This knob determines the amount of midrange “Dip” (cut) to be applied to the frequency set by the midrange frequency selector.

## High Peak Controls

**Frequency Selector Switch** This switch determines the frequency of the high-midrange portion of the equalizer. Five frequencies are available: 1.5kHz, 2kHz, 3kHz, 4kHz, and 5kHz.

**Boost Knob** This knob determines the amount of high-midrange “Peak” (gain) to be applied to the frequency set by the high-mid frequency selector.

## MEQ-5 Response Curves

We’ve included a few frequency response plots that illustrate the response curves of the MEQ-5. All plots were taken at a sample rate of 192kHz.

## Low Peak Response

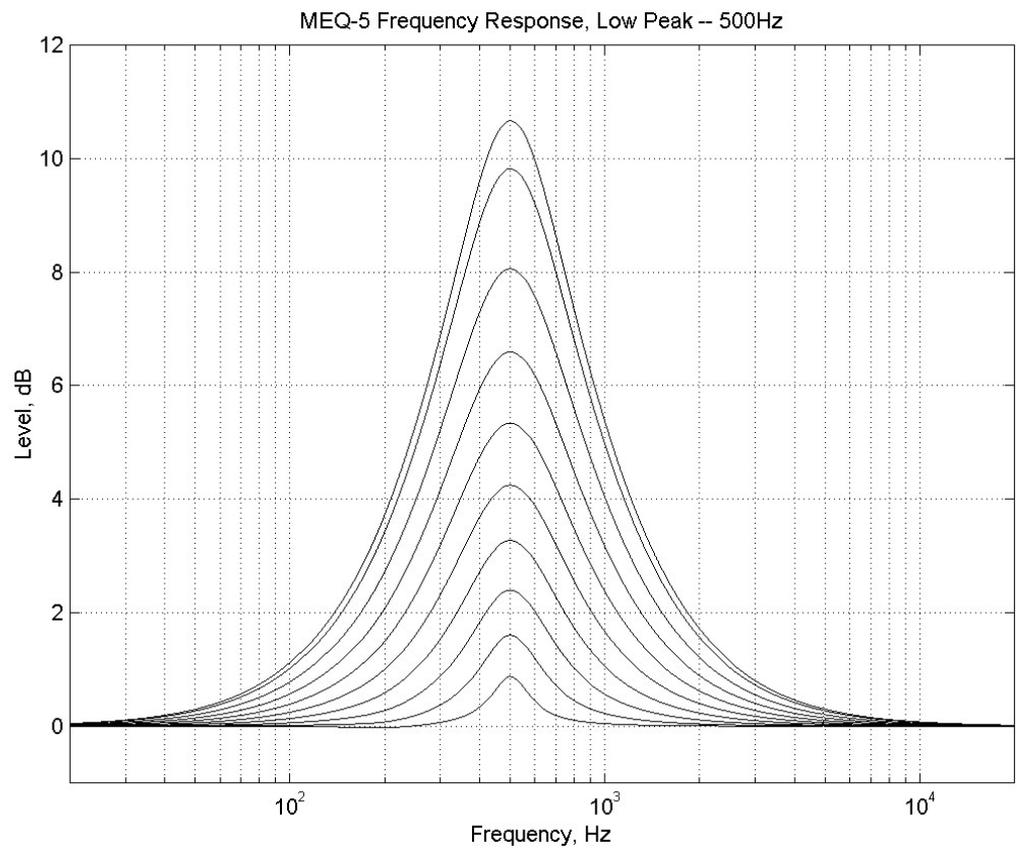


Figure 69. Pultec MEQ-5 Low Peak Response



## Dip Response

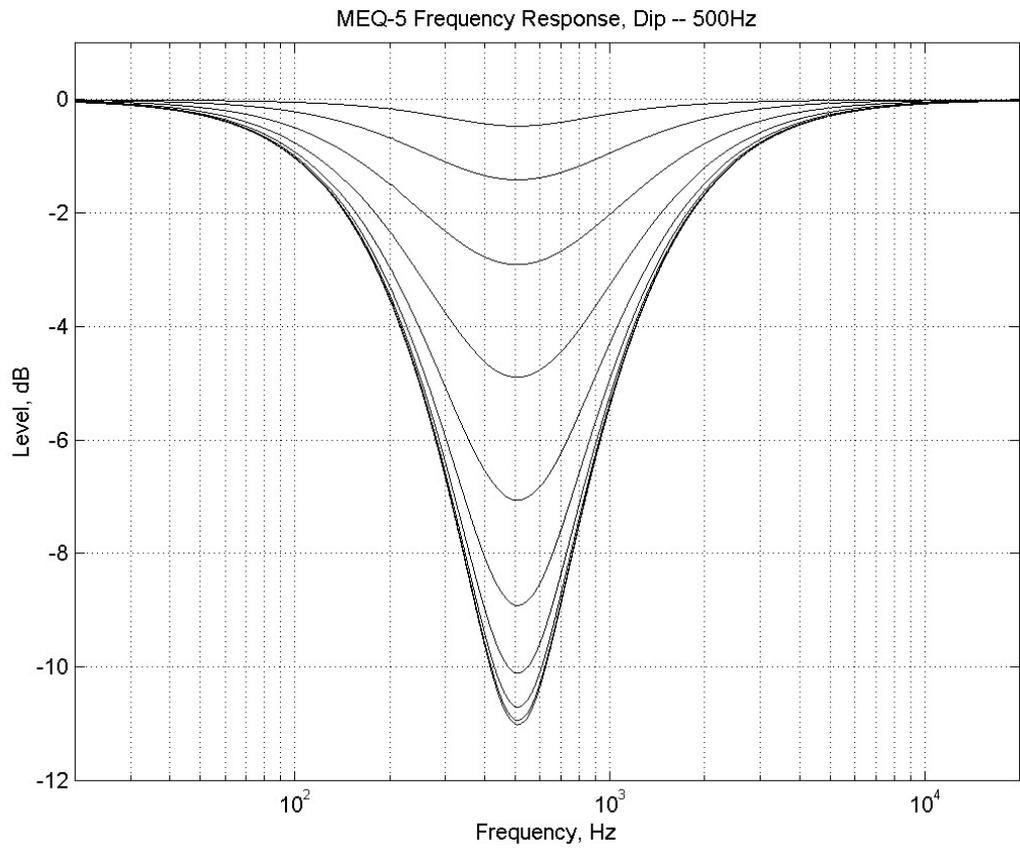


Figure 70. Pultec MEQ-5 Dip Response



## High Peak Response

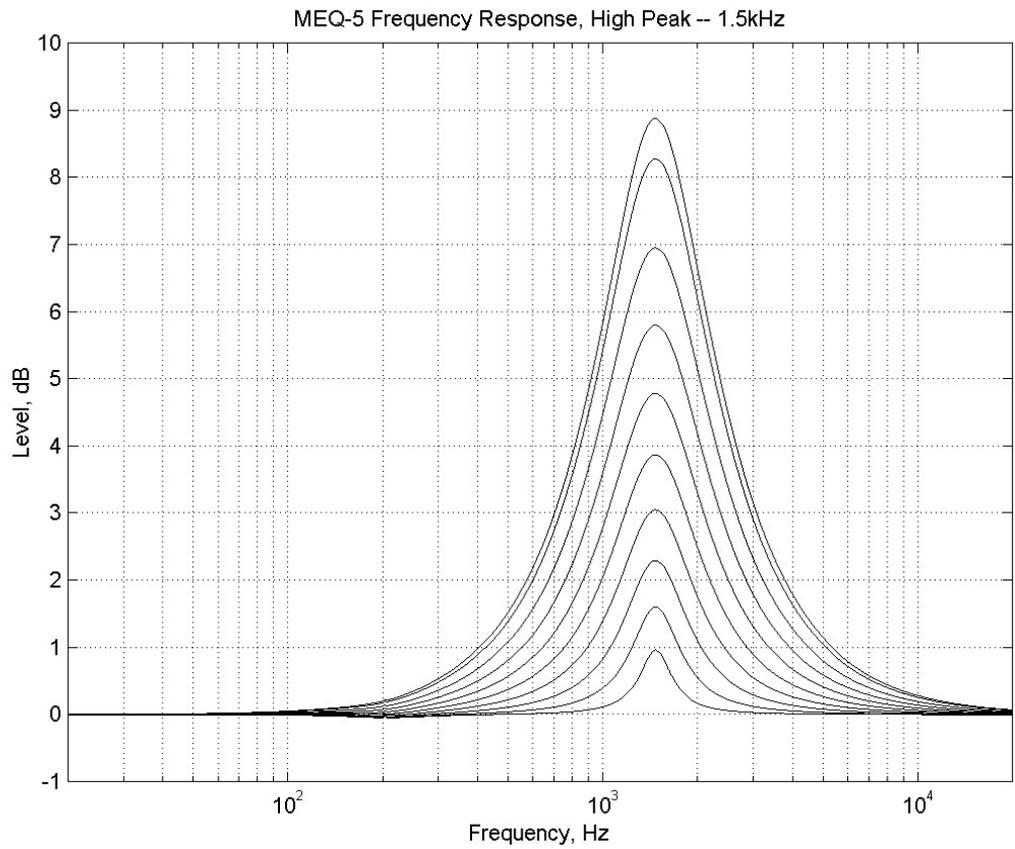


Figure 71. Pultec MEQ-5 High Peak Response

