DP User Software Guide

This guide presumes that you have read the relevant information relating to the DP series preamp in the Cole Clark Guitar Owner's Manual and are familiar with using the Cole Clark DP series preamp.

A knowledge of audio filters and the way that they affect an audio signal would be helpful for a greater understanding of some of the more advanced functions of the DP User software. This is not essential if you just want to make some simple EQ and volume changes to the User pre-set.

Profiles & Pre-sets

The software that we use at Cole Clark allows us to set up a sequence of parameters that instruct the firmware in the DP series preamps on how to mix and equalize the signal created by the input sensors of a particular guitar model. This sequence of parameters is called a *profile* and stored in a *pre-set* in the memory of the preamp. Each preamp has a *Factory* and a *User* pre-set which can be selected at will by the player.

It's important to understand that the parameters stored in each pre-set, set up a template of *how* the signal path will flow and the *range* that the relevant rotary or slide controls will work within, **not** the *position* of each control; this is **not** stored.

The DP User Software

Basically, this software allows you to edit the profile stored in the *User* pre-set of the DP series preamps.

This new profile can be used to overwrite the existing *User* profile; the file can be also *Saved* to the memory in your computer. A previously saved profile can also be *Loaded* into the User software and used to overwrite the contents of the User pre-set in the preamp.

DP2 and DP3

Both preamps have identical performance and layout except that the DP3 has an inbuilt the condenser microphone.

The **DP2** model uses the top right-hand control on the preamp labelled "C" to regulate an audio filter that can used to apply a **C**ontour such as a mid-range cut to the output of the preamp.

The **DP3** model uses the top right-hand control labelled "M" to blend the mic output with the Bridge/Face mix into a final mixer. The control is also used to regulate two audio filters, one for the Bridge/Face mix and one for the mic.

The filter parameters that can be edited include *Filter Type*, *Frequency*, *Q-Factor* and *Level*. With these filters, you could set up a crossover to split the frequencies between the Bridge/Face mix and the mic if preferred.

Filter Type

There are eight settings of this parameter to control the filter: - *Not Used, Low Pass, High Pass, Band Pass, Notch, Parametric EQ, Low Shelf* and *High Shelf*

Q-Factor

Note: - The Q in Q-factor stands for the Quality of an audio filter, not as in good or bad quality, but the number represents the bandwidth of the filter, measured in octaves (or fraction of) between the -3dB points either side of the centre Frequency of the filter. A low Q factor means that the bandwidth is wide and a high Q indicates that the bandwidth is narrow. For example, a Q of 0.432 has a 3-octave bandwidth and a Q of 4.32 has a bandwidth of 1/3 octave.

The Q-factor of 0.707 shown in the Tone control picture represents a bandwidth of 1.9 octaves either side of the centre frequencies of 160Hz Bass to Midrange and 1700Hz Midrange to Treble.

DP2

On the DP2, the "C" control can be used to apply a different *C*ontour to the output of this mixer.

DP3

On the DP3, the "**M**" control regulates the audio filter in the same manner as the DP2 but is also used to blend in the output of the inbuilt condenser **Mic**.

Connecting the DP Series Preamp

Plug the guitar in to an amplifier

Unless you are connecting the preamp to the computer to load a pre-saved profile, you should plug the guitar into a full-range amplifier so you can monitor any changes, preferably the amplifier that you normally play through especially if you play in live situations.

Start the program

Click on the CCDP User icon to start the Cole Clark Digital Preamp Manager program.

You should see a window open with a blank background and a message showing "Scanning Port …nn." with some numbers scrolling; this is the program scanning the ports looking for the preamp.

Connect the USB lead

Using a Type A to mini-B USB lead, connect the computer to the USB socket of the DP series preamp. After a short period of time, the computer should connect to the preamp and display a facsimile of the fascia that is representative of the preamp model fitted to the guitar.

DP2 and DP3 Fascia

When you see either of these two fascias displayed, the computer and the preamp link is active and the parameters for each of the profiles stored in the Factory and the User pre-sets are sent to the computer and the preamp is switched to the **User** pre-set.

Real-time control

The computer at this time, has real-time control of the preamp so all changes to the signal path via the computer are immediately transmitted to the preamp so made edits are heard through the amplifier as they happen.

Editing the User pre-set

What can be edited

You can edit the parameters for the *Bridge/Face - B/F, Volume - V*, *Contour - C or Mic - M* and the *Treble-Mid-Bass tone controls*. You can also *load* a pre-saved profile into the **User** pre-set or *save* the current edited pre-set to the computer's storage system (Hard-drive, SSD or USB stick)

Parameter display window

When you click on the displayed fascia on or near a rotary or slider control that you wish to edit, a window is opened with three tabs, an *Edit* tab, a *User* tab and a *Factory* tab with the *Edit* tab pre-selected. This tab displays a page with parameters relevant to the control.

When the window first opens, the *User* pre-set of the preamp is selected, the *Edit* tab is selected and the page displays the relevant parameters with values from the *User* pre-set. If you click on the *User* tab at this stage, it will display the same parameters with the same values as those shown on the *Edit* page.

If you click on the *Factory* tab, the preamp is switched to the *Factory* pre-set and the page then displays settings for this pre-set. Clicking back onto the User or the *Edit* page at this stage switches the pre-amp back to the *User* pre-set and updates the respective page with the parameter values for this pre-set.

Note: - The monitored sound changes as you switch between tabs to enable you to compare the different settings

Saving the User pre-set before editing It's a good idea to save the User profile to the computer before making any edits, then you can just reload it if necessary.

Editing control parameters

Only the *Edit* page allows changing or editing any parameter values, the other pages are display only.

When a parameter value is edited on the *Edit* page, the parameter values are updated in the preamp immediately.

With an edit in progress, it can be useful to click on the *User* and **Factory** tabs to compare the sound difference between the edited sound and the two pre-sets.

Updating the User pre-set

After editing parameter values the **Apply** button can be clicked which will update the **User** pre-set in the pre-amp and close the window. Clicking on the **Cancel** button closes the window without updating **User** pre-set. Subsequent opening of the same window starts the whole process again with the Edit page showing the status of the User pre-set parameter values. *Note: - When the **Cancel** button is clicked, only the current edit in the current window is cancelled, any changes already made by clicking on the **Apply** button in any of the windows previously, will already have updated the pre-amp.*

The Edit Windows

As mentioned previously you can edit the parameters for the **Bridge/Face - B/F, Volume - V, Contour - C or Mic - M** and the **Treble-Mid-Bass**.

Reminder: - You need to have the guitar plugged into the amplifier when editing so you can hear the changes made whilst editing.

Volume Edit Window

The volume control is the easiest control to start with as there are only two parameters involved; the Minimum and Maximum values of Volume output of the preamp.

If you click in the upper centre area of the fascia on or near the **V**olume control, the edit window for this control is displayed as shown in the picture.

There are two graphical representations of a slide control; one on the left-hand side and the other on the right-hand side of the window. These two parameters set the range that the preamp volume control will work within.

The value on the left-hand side represents the **Minimum** preamp volume output in dB which is when the Volume control on the preamp is fully counter clockwise. The value on the right-hand side sets the **Maximum** preamp volume output in dB which is when the Volume control on the preamp is fully clockwise.

Volume control range

The range for the Minimum value is -80dB to -40dB and for the Maximum value is -10dB to +10db. With settings as displayed in the picture, the Volume control on the preamp will adjust the output level from -60dB when in the minimum position, to 0dB when control is set at the maximum position.

Editing the value

Experiment with the right-hand slide control by setting its value to +3dB for instance; you will notice the volume increase from the amplifier as you do this. If you now click on the **User** tab, then the **Factory** tab, you will hear the volume difference and see the **Minimum** and **Maximum** volume parameter values that are currently stored in the **User** and **Factory** pre-sets of the preamp respectively.

Saving the edited changes

Click on the **Apply** button and the **User** pre-set in the pre-amp is updated with the new value and the edit window closes. You can check that this has happened by clicking on the Volume control area again. You can see that the Maximum value now shows +3dB on both the **Edit** tab page and the **Use**r tab page.

Try editing the **Maximum** parameter with another value such as +5dB again, but click on the **Cancel** button instead; when you open the editing window again, you will see that this time, no changes were made as the values revert to +3dB on both the **Edit** and the **User** page

Checking the User pre-set edit

At this stage, you should have successfully made your first edit., If you unplug the USB link and then plug it back in again, you will find that the changes made to the volume persist.

B/F - Bridge/Face Edit Window

This rotary control regulates the blend between the Bridge and Face sensor outputs and can also simultaneously regulate the frequency response of each sensor. The Edit window has two tabs, each with a page allowing parameter values to be set for both counter-clockwise and clockwise positions. As the control is moved clockwise through its range, the levels and the filter settings gradually change from the values set in the counter clockwise page to those set in the clockwise page.
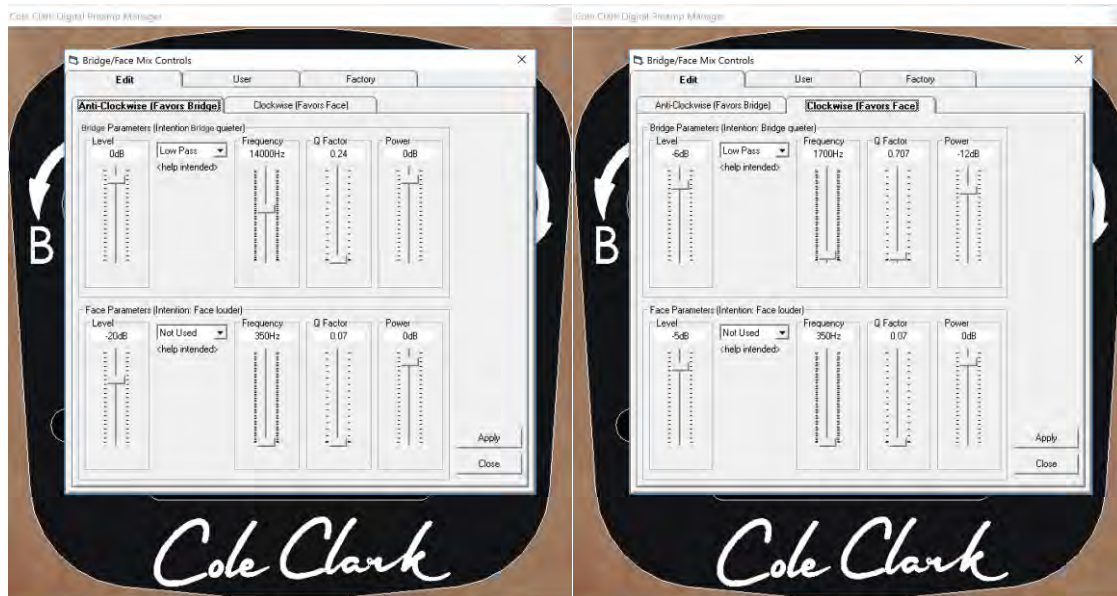
Typical settings

Typical usage of this control could be to set the level of Bridge sensor to maximum (0dB) and regulate the Bridge filter parameters to a wide frequency response with the level of the Face sensor attenuated when it is set Counter-clockwise. As it is moved more towards the clockwise position, the Bridge sensor output is gradually attenuated and the filter parameters changed to roll off the upper frequency response, whilst gradually increasing the level of the Face sensor and changing its frequency response to compensate for the frequencies rolled off from the Bridge sensor output.
*Note: -the Face sensor has a hardware crossover set to 350Hz **before** being digitized to prevent unwanted feedback.*

Options

The way that this control is setup by Cole Clark is certainly not the only option, but it is useful to see what we have done to help you understand the potential, then you can come with some ideas of your own.

Small Steps

First of all, let's break the functions down into a series of small steps with relation to the position of the control.
Note: - The top half of the page shows the Bridge sensor Level and Filter parameters; the bottom half shows the Face sensor Level and Filter parameters.

Counter clockwise position

Bridge sensor is at full output (**0dB**)
The audio filter for the Bridge sensor output into the Mixer is set to a wide bandwidth: - **Type = Low Pass**, **Frequency = 14000Hz**, **Q Factor = 0.24 (4.27 octaves)** with **Power (Level) = 0dB**
Face sensor **Level** is attenuated to **-20dB**
The audio filter for the Face sensor is not used so the lower frequency is set by the 350Hz hardware crossover

Clockwise position

Bridge sensor is attenuated to -6dB
The audio filter for the Bridge sensor output into the mixer is set to a wide bandwidth: - **Type = Low Pass,**

Frequency = 1700Hz, Q-Factor = 0 .707 (just under 2 octaves) with ***Power (Level) = -12dB***
The Face sensor Level is increased to ***-5dB*** (from ***-20dB***)
The Audio filter remains unused so only frequencies above 350Hz are output

C - Contour Edit Window : DP2 model only

After the outputs from the Bridge and Face sensors have been blended and frequency corrected, this mixer output is fed into another audio filter regulated by the rotary control labelled "**C**" on the top right-hand side of the preamp. This can be used to apply a mid -range cut in the overall frequency response.


In the usage shown with rotary control set counter-clockwise, the filter parameters are set to **Type = Parametric, Frequency = 740Hz, Q-factor of 0.707 and Power level of 0Db.** As the rotary control is turned clockwise, the filter level gradually changes the Power Level until the attenuation at the affected frequencies is **-8dB** when full clockwise.
Note: - another way of programming this would be to have the Power set to -8dB when the rotary control is fully counter-clockwise and have it come back to 0dB when in the clockwise position. This would reverse its function with the attenuation of mid-range frequencies happening when the control is fully counter-clockwise. All you would need to do is swap the power values of the filter; from 0dB to -8db on the left side parameters and from -8dB to 0dB on the right side.

M - Mic Edit Window : DP3 model only

After the outputs from the Bridge and Face sensors have been blended and frequency corrected, this mixer output is fed into another mixer that blends it with the mic output. Like the Bridge/Face rotary control the rotary control labelled "**M**" regulates several functions at once.
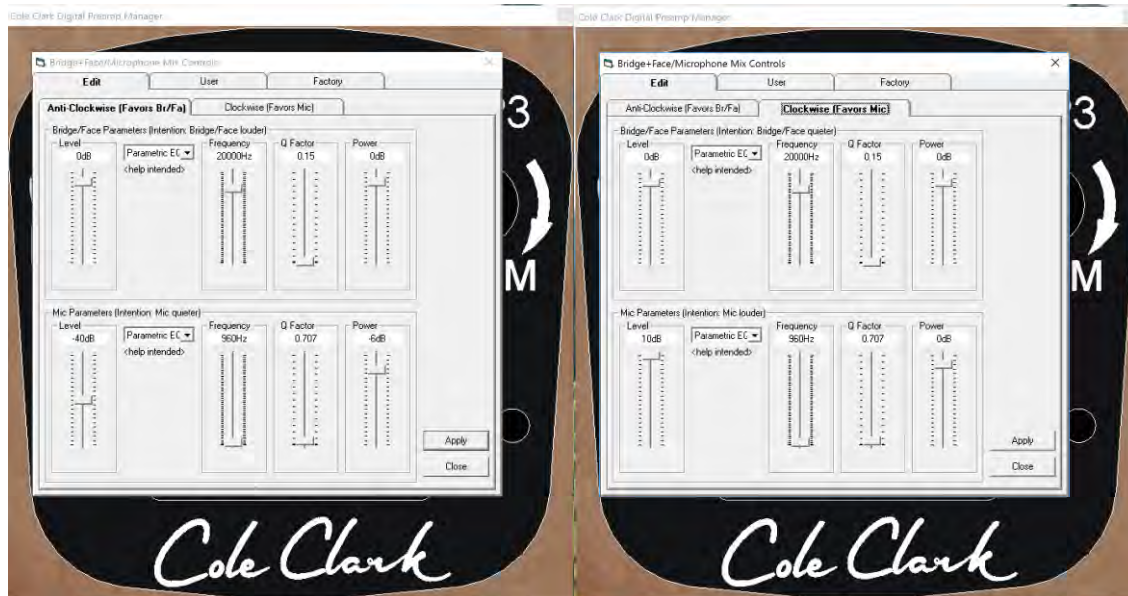
The Bridge/Face mix coming into the mic mixer has an audio filter which has parameter settings for the counter-clockwise and clockwise positions of this control; the mic output into the mic mixer is equipped with an audio filter also.
 As you can see in the pictures of the edit window, the mic output is set to -40dB in the counter-clockwise position and increases to +10DB when the rotary control is fully clockwise. The Bridge is left at 0dB and the mic is added with a parametric filter set to a Q-factor of 0.707 at a frequency of 960Hz.

Options
If required, the audio filter that regulates the Bridge/Face mixer could be set up to roll off the upper frequencies when the control is turned clockwise and the mic could be added at higher frequencies effectively creating an active crossover.

Tone Controls Edit Window
After the Bridge and Face sensors have been mixed and frequency corrected and then blended with the Mic output (or frequencies **Contour**ed - DP2 only), the final mixed output is fed into the Tone control stage. This stage has three pairs of slider controls to set the upper and lower parameter values for the Bass, Mid and Treble rotary tone controls. These six sliders occupy the top half of the page.

Tone control range
The range for the *Min*imum value on each of the three tone controls is -35dB to -15dB; the range for the *Max*imum value is -15dB to 0dB
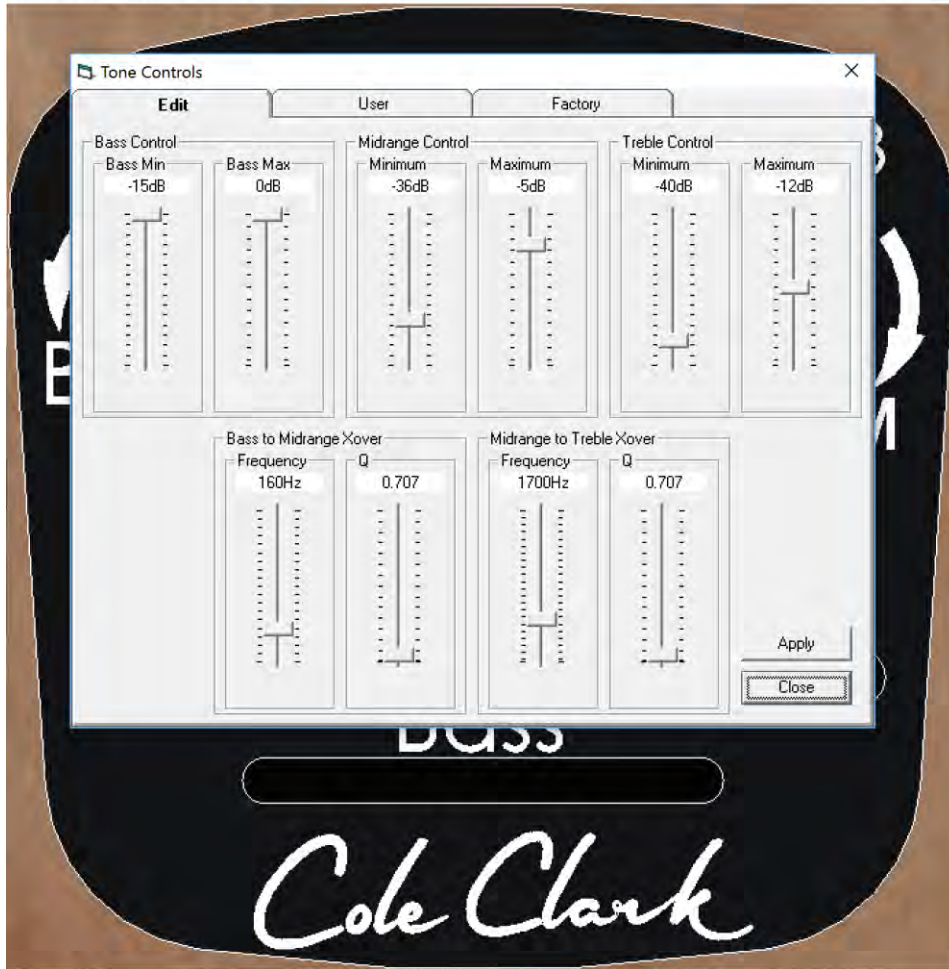
EQ filter
The bottom half of the page displays the parameters for the two audio filters that regulate the crossover (Xover) between the Bass to Midrange and the Midrange to Treble tone controls. Parameters for the crossover frequency and the Q of each of the filters can be edited.

Xover control range
The Bass to Midrange Xover frequency range is from 80Hz to 440Hz and the Q range is 0.07 to 14.14.
The Midrange to Treble Xover frequency range is from 800Hz to 4000Hz and the Q range is from 0.07 to 14.14.