

## Pro Z - Programming the Z-Mode Switch

The Z-Mode is an internal electronic switching system that connects different electronic loads to each pickup which changes the way the pickup sounds. Changing the load electronically is an extension to a traditional technique used to change the sound of a passive control setup. For example, many players will debate whether for pickup type X a 250K volume pot sounds better than a 500K pot. The summed effects of the 2 volume pots + the tone pot & it's cap + your amplifier's input loading in a standard passive bass setup determines the electrical load on the pickups and thereby how the bass sounds. By changing the pots you could change the loading a small amount and get a slightly different sound.

The Z-Mode system extends this concept to allow larger variations of the loading and isolates the 2 pickups from each other, allowing separate loading control. Now a broader selection of organic sounds can be obtained in your pickups and you are not dependent on the loading of the amplifier that you are plugged into. With the Z-Mode system, you will not lose the passive sound because the Mid Z-Mode setting is a match to a standard passive loading setup. Initially players may prefer the Mid Z-mode because they are most familiar with this sound but as you experiment with other load configurations.

The Z-Mode system includes a 3 position mini toggle switch so that you have 3 different load configurations at your disposal. To change the pickup load configuration you simple move the switch – the preamp reconfigures it's self internally to the new mode. The factory settings for the Z-Mode switch are Low, Mid and High Z-Mode loads applied to both the neck and bridge pickups; but you can change the loading which is applied to the pickups in each switch position.

Different players, musical styles and pickups work best with different loads. To give you the fullest range of options each of the 3 Z-Mode switch positions can be programmed to select 1 from the 9 different Z-Mode configurations shown in the table below. This allows you to get the best sound from your pickups for your personal playing style.

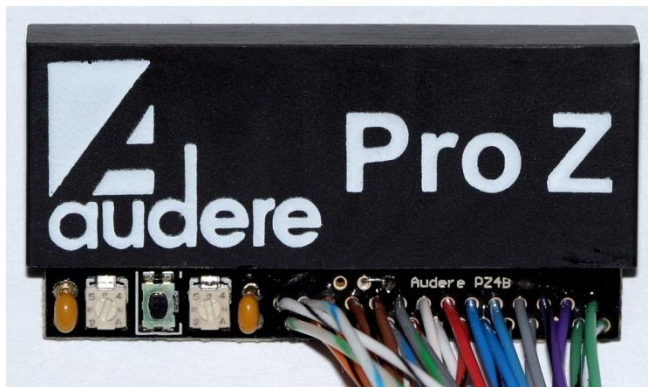
For example, some pickups do not have much of a unique high Z-Mode response. These pickups have a low number of turns in their coil windings and this creates a limited amount of inductance such that the resonant peak is smaller and at a high frequency that is not easily heard<sup>1</sup>. But these types of pickups have a bigger separation in the sound of Mid Z-Mode compared with Low Z-Mode. For this type of pickup you probably want to reprogram up your 3 modes to be Low, Low + Low', Mid + Mid, Mid to get more interesting Z-Mode switch settings. With other types of pickups built with a different winding pattern you might favor the High or High' Z-Mode settings to get the most interesting sounds from your bass.

Note when 2 different Z-Mode combinations are chosen for the neck and bridge the mixing control (balance or volume pair) becomes more powerful and slight movements of your hand to select a different location from the bridge to neck will have a larger impact on the sound.

Z-Mode settings: (flash count)	Neck-Z-Mode	Bridge Z-Mode	Default
1	Low	Low	Yes
2	Low'	Mid	
3	Low'	High	
4	Low'	High'	
5	Mid	Mid	Yes
6	Mid	High	
7	Mid	High'	
8	High	High	Yes
9	High	High'	

Low' is similar to low Z-Mode but even darker – i.e. the pickup signal has less high frequency content.

If you look at the enlarged preamp below you will see in the lower left (below the Audere logo) the section holding the adjustments which will be described next.



In the Low and Low' Z-Modes each pickup has an independent gain setting as pickups response very differently in this mode in terms of their volume level. Rotate the pot clockwise to increase the gain. The goal is to balance this setting with the Mid Z-Mode level or you might prefer to set the bridge pickup's sound level slightly high so that you can clearly hear it's lows. The pot on the left is the Bridge pickup gain. The pot on the right is the Neck pickup gain. The pots are adjusted with a small screw driver. If you look very closely you will see 2 small indents located on each side of the screw driver slot which you can think of as an arrow head to indicate where the pot is set.

For High Z-Mode you have the option to change the additional capacitors which are inserted into the gold sockets separately for each pickup. For some pickups a High Z-Mode without any additional capacitance might be too bright. The extra capacitance would be like changing from a machine wound jazz pickup to a higher end handmade scatter wound design in this mode. The additional capacitance will reduce the frequency of the resonant peak. The cap on the left is the Bridge pickup capacitor. The cap on the right is for the Neck pickup capacitor. Most players do not change the cap adjustments but we offer an optimal set of caps if you want to experiment.

High' is identical to High Z-Mode with 0 extra capacitance – in other words the extra capacitance has been switched out. For most pickups this is as bright as the pickups will get based on their design and construction. Having the 2 High modes allows you more sonic options to work with.

The configuration of the Z-Mode switch's current position is reprogrammable using the switch located in between the 2 pots in the picture above. The switch is small but simply presses down on the black switch top as required in the reprogramming procedure.

Reprogram the Z-Mode switch load settings:

- 1) Place the Z-Mode switch in any of its 3 positions – you are going to program the selected switch position to any one of the Z-Mode configurations from the above.
- 2) Hit the programming button
  - a) The present Z-Mode number will be flashed on the LED
  - b) If the desired mode is already programmed into this switch position – simply stop for approximately 5 seconds – you will see the led fast flash and the programming operation will be aborted leaving the Z-Mode in the present state.
  - c) If you want to change the mode then hit the programming button N times to program a new mode into this Z-Mode switch position.
    - 1) The LED will light each time you press in the button
    - 2) After you are done – stop for approximately 5 seconds – the LED will flash the count of the mode stored.
    - 3) If you enter an invalid number of button presses the LED will fast flash and the programming operation will be aborted.
    - 4) If you move the Z-Mode switch during programming – the LED will fast flash and the programming operation will be aborted.

Superscript notes for the geeks:

1. The pickup's coil Q is normally also low so that just increasing the capacitance of the LC circuit to being the frequency down will still not yield much of an audible peak.