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Genesis of a Master Transfer Console

The idea behind this Master Transfer Console is to have a centralized processor to handle the signal path along an analog chain of effects for the audio mastering process in order to enhance a stereo track with great precision and reliability. After exclusively using a patch bay strictly out of convenience, a Transfer Console became an apparent and better suited alternative. Sonic integrity is substantially increased using higher quality components, it maintains repeatability, simplifies bypassing, as well as allows minute control over an audio signal and gain staging which can easily be adapted based on the source. All of this was made possible and, most importantly, affordable by using kits available online.

Coming to the conclusion that a Mastering Transfer Console is now a necessity, initial research was conducted to see what commercial options there are and to see what each offered. Starting with the [Dangerous Master](#), this unit offers 2 inputs, 3 bypassable inserts, input monitor offset, Sum and Minus (S&M) availability, stereo width adjustment, 2 outputs, and input / output gain. The [Manley Backbone](#) was quite similar with input / output gain and similar S&M functions (labelled Sum and Difference), but now 3 inputs, 5 more inserts, swapability of insert 4 and 5, the option for additional monitoring functions, and now a “mix/fade” option as well. Last but not least was the [Maselec MTC-1X](#). In addition to all the options that the Manley Backbone offers, this console includes selectable High Pass and Low Pass Filter options, 2 flip functions between inserts 1 and 2, as well as 4 and 5, Mid Side insert balance, an elliptical filter, and varying inputs and outputs to effectively make this a console and monitor controller in one unit. All three are fine choices, spec extremely well, and could serve their purpose for any mastering facility. While each have their pro’s and con’s there is a pattern emerging. Each has multiple inputs, bypassable inserts, Sum and Difference or Mid Side capabilities, Stereo Width Adjustment, and input / output gain. They are also housed within a 2-3 Rack Unit chassis, incorporate XLR connectors, and cost anywhere from roughly \$5,000-\$10,000. In place of having an “all-in-one” console, other options emerge as well. Combining other pieces of gear such as the [Avenson Mid-SideR](#) to handle stereo width, Mid Side Processing, and elliptical functions while using an SPL [MasterbayS](#) to handle the multiple inserts, swapping and bypass of inserts, and input / output gain seems tempting as well. However, no matter which option is chosen the same conclusion can be reached. The price is steep and size in rack units is roughly the same when all is said and done. After doing more research and finding success with a previous build of a [Don Classics 500 series 250 EQ](#), another idea comes to mind.

Stumbling across more than one [gearslut](#) post and a [GroupDiy thread](#) showcasing custom mastering consoles, the plausibility of creating a console by hand seemed more likely. But as this was a completely unique build, the needs of a custom workflow were considered in the design of this console, as well as the availability of parts and PCB’s. Links quickly pointed in the direction of [ka-electronics](#), a

site owned and operated by Wayne Kirkwood. Wayne is highly regarded as an expert pioneer of IC's utilizing low noise opamps and creating stellar circuits made with audio mastering in mind. As there will only be one source for the pitch and catch (one AD/DA converter to send through the master console), and monitoring will be handled by a separate monitor controller the size of the unit is kept to a minimum. The PCB's available also allowed for simple cascading and can easily be expanded upon by going from one to the next, thereby making it simple to pick and choose only the necessary functions. By utilizing the [MTC-IGFO](#), [MSII](#), and 2 [Insert Switcher Boards](#), this effectively means that a streamlined commercial console such as the ones listed above is now viable using only kits. Knowing that there is an option of purchasing a built and tested PCB with all necessary components is convenient, but building and soldering on the consumer end is even cheaper still. After pricing out the PCB's, multiple Mouser bill's of materials, ELMA switches, and a custom 1 Rack Unit Chassis through [Front Panel Express](#), the total cost is less than \$3,000.

Based on the schematics and descriptions of the PCB's at ka-electronics website, there are a number of features that can be implemented. However, in order to incorporate all the options, a larger space is required. Trade offs of using all of the features designed on the PCB's include having a 2 Rack Unit Case, utilizing XLR connectors on the back as well as the ability to have more freedom of design when it comes to the chassis, layout, and front panel. In order to keep a smaller footprint within a 1 Rack Unit Chassis, streamlining these options are taken into consideration but can prove to be challenging. The rotary switches themselves are a limiting factor as they take up the most real estate on the front panel. Specifically, the [Elma switches](#) need a certain amount of space in between each other to accommodate for the switches mechanical housing behind the front panel, added resistors, as well as the [push button switches](#) in between. The High Pass and Low Pass selectors use [NKK rotary switches](#) and only have about 1mm of room between the top and bottom panel. These have to be placed with great consideration.

After deciding on parts, and spacing them out accordingly, features are now affirmed in a physical layout as well as the internal signal flow. Building was on a piece by piece basis, as the option to buy kits individually and as components arrived in stock was simpler than to buy everything in one go. While certainly doable, ordering each bill of materials and building the PCB's one by one before assembling made the process less overwhelming. This also allowed enough time to check the tolerances of each component to ensure that it was within spec and exactly what was needed. After building most of the PCB's, the overall layout was revised multiple times until the right dimensions could be used for the switches on the front panel, as well as the mounting holes on the bottom side of the chassis to keep the PCB's in place.

By using kits and building the Master Transfer Console by hand, the total cost of this project was kept to a minimum and much lower than commercial offerings. Though the price was less overall, the quality of components and features are comparatively uncompromising. This Mastering Transfer Console includes variable Left and Right input gain, switchable +5db gain, stereo width adjustment, 2 selectable High and Low Pass Filters, 5 bypassable inserts, one insert with mid side or left right, the ability to flip between inserts 2 and 3, and inserts 4 and 5, a unique gentle side tilt EQ designed by Wayne, and individual Mid, Side, Left, and Right mutes to monitor the signal as it passes through. The final result is more rewarding than originally anticipated and could not have been possible without an extremely helpful DIY Community, some patience to learn, and building it myself.