

The LessLoss Firewall module is available to the DIY modifier for self installation. We provide this information to those who feel comfortable soldering on their own and in general have enough experience to deal with high voltages with confidence. LessLoss will not be held responsible for the fate of your equipment or health or other personal property should you choose to use our product in your own designs. The Firewall is designed to withstand 1000VDC internally between the Lin and Nin leads.

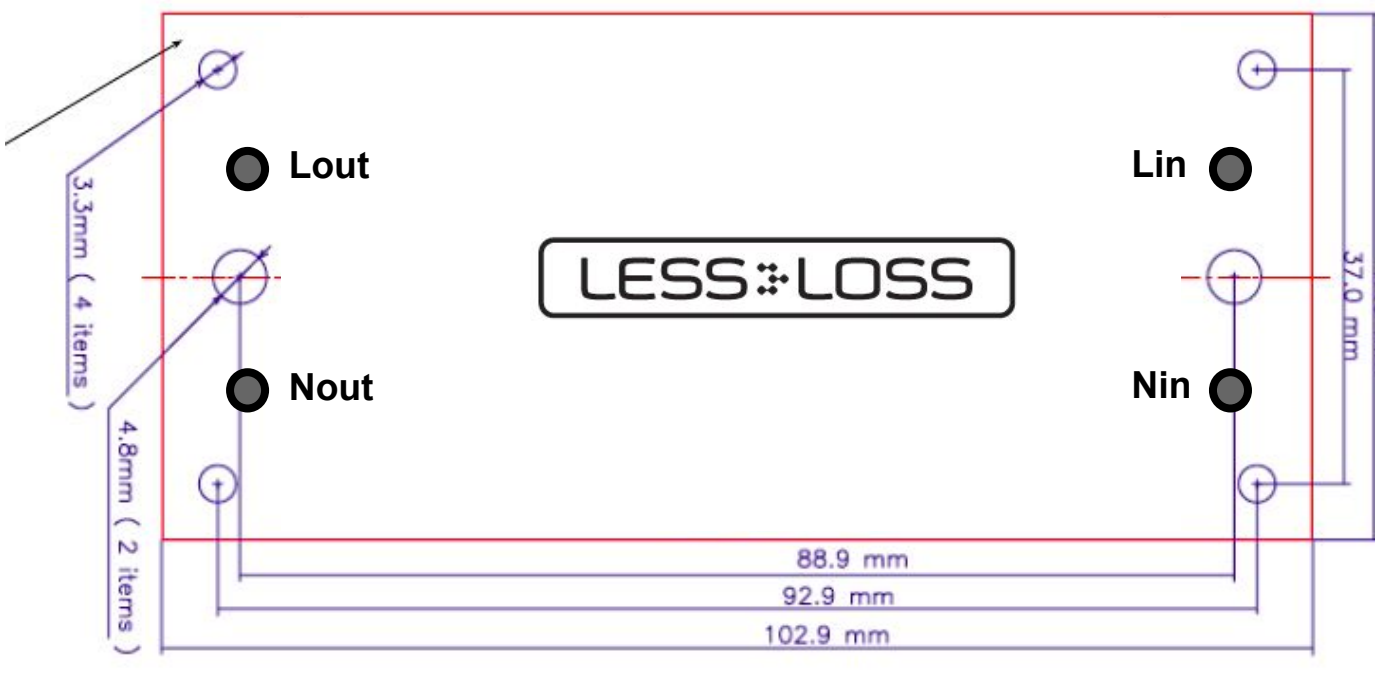


Figure 1: Dimensions and mounting hole location of a single Firewall board.

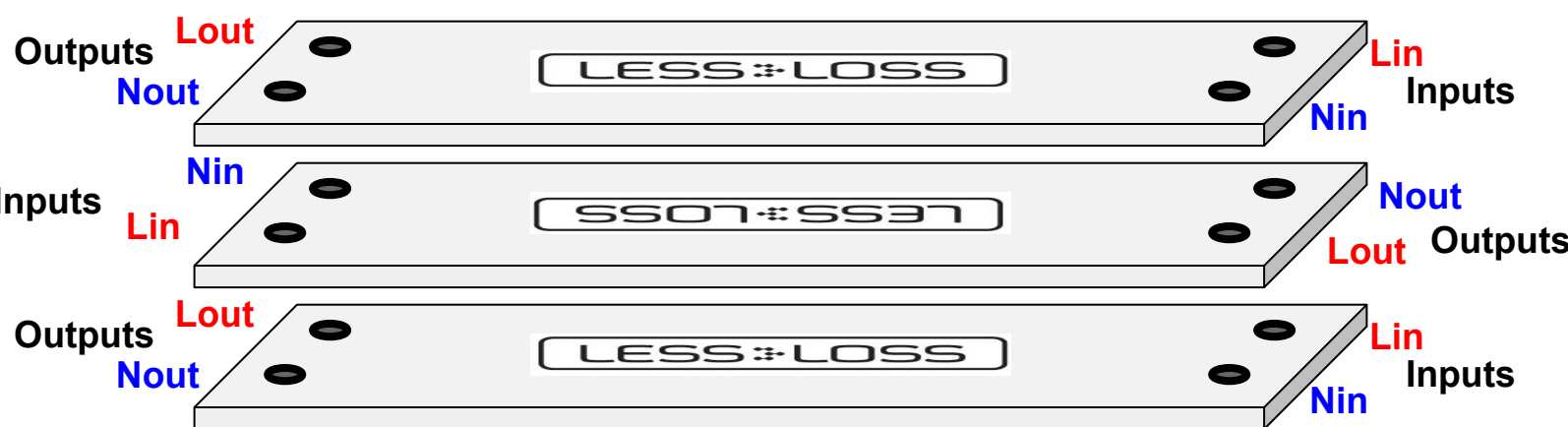


Figure 2: Incorrectly configured stack. Do not stack the Firewall modules this way.

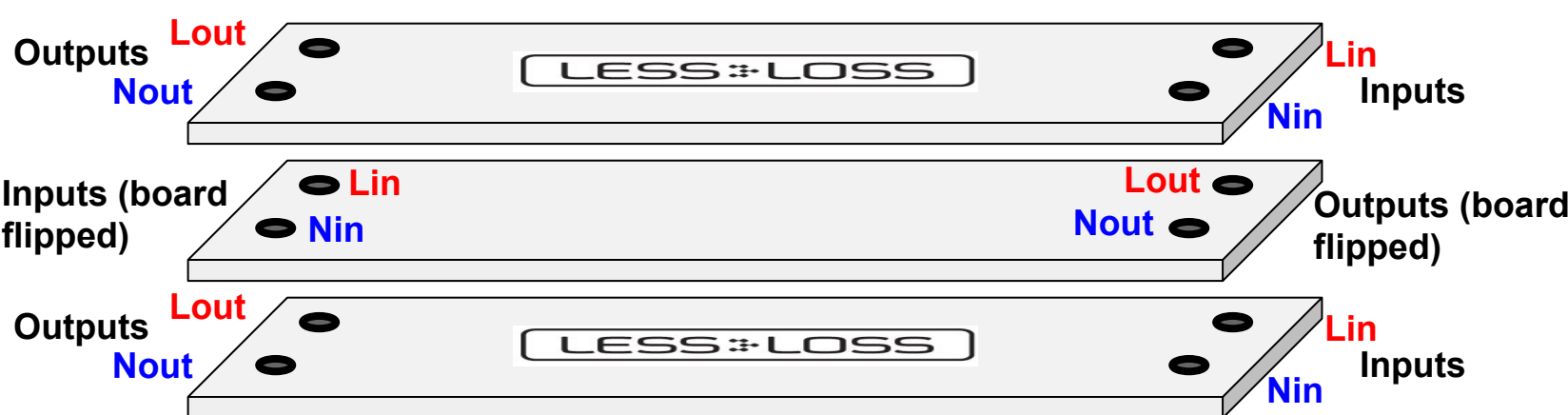


Figure 3: Correctly configured stack. When stacked in this way, the middle unit's logo appears on the bottom face.

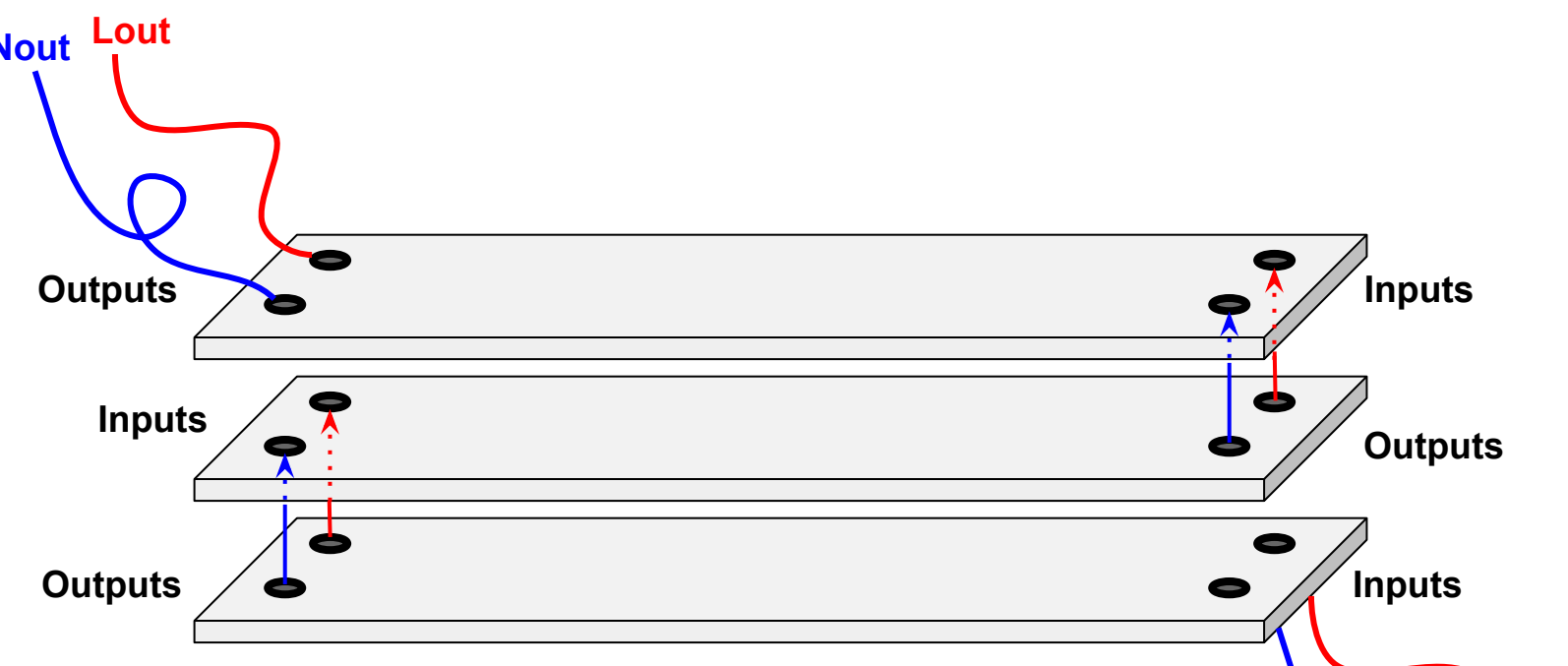


Figure 4: Odd number of FW modules per stack: Inputs and outputs wind up on opposite sides of the stack.



Figure 5: Even number of FW modules per stack: Inputs and outputs wind up on same side of the stack.

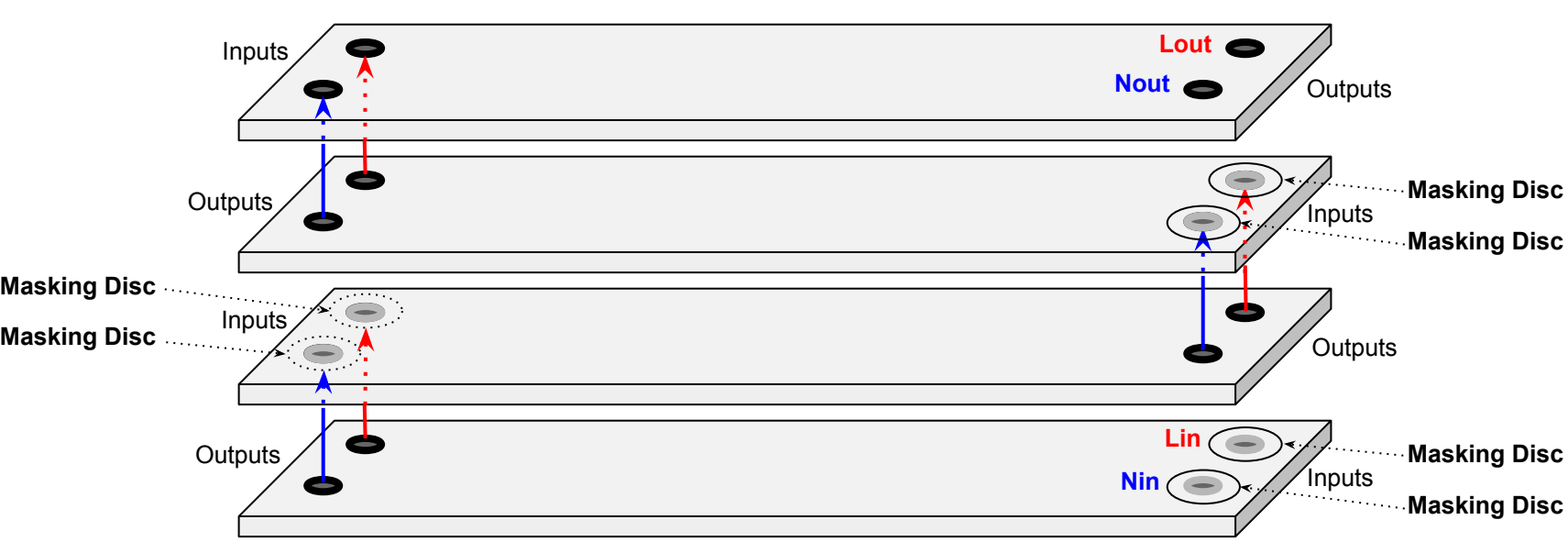


Figure 6: Insert non-conductive layer of material to ensure proper flow of electricity through the stack. Kapton tape is a good material. Masking discs can be used. Align the stack perfectly for best results.

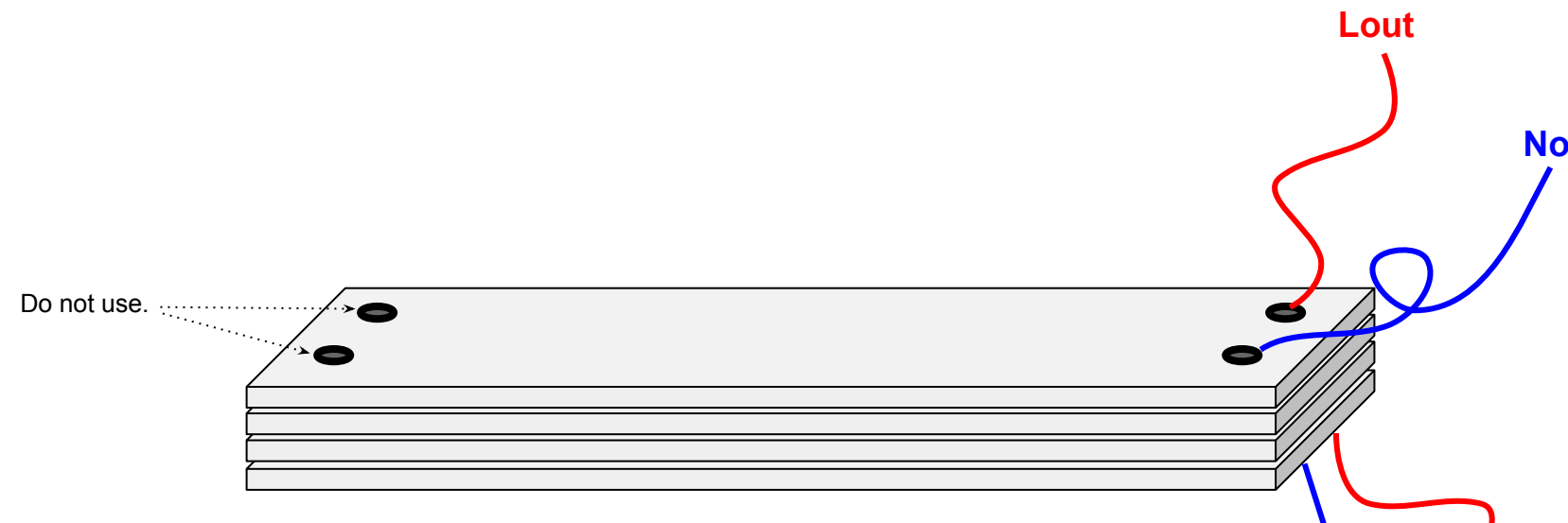


Figure 7: A completed stack of four Firewall boards with inputs and outputs on the same side.

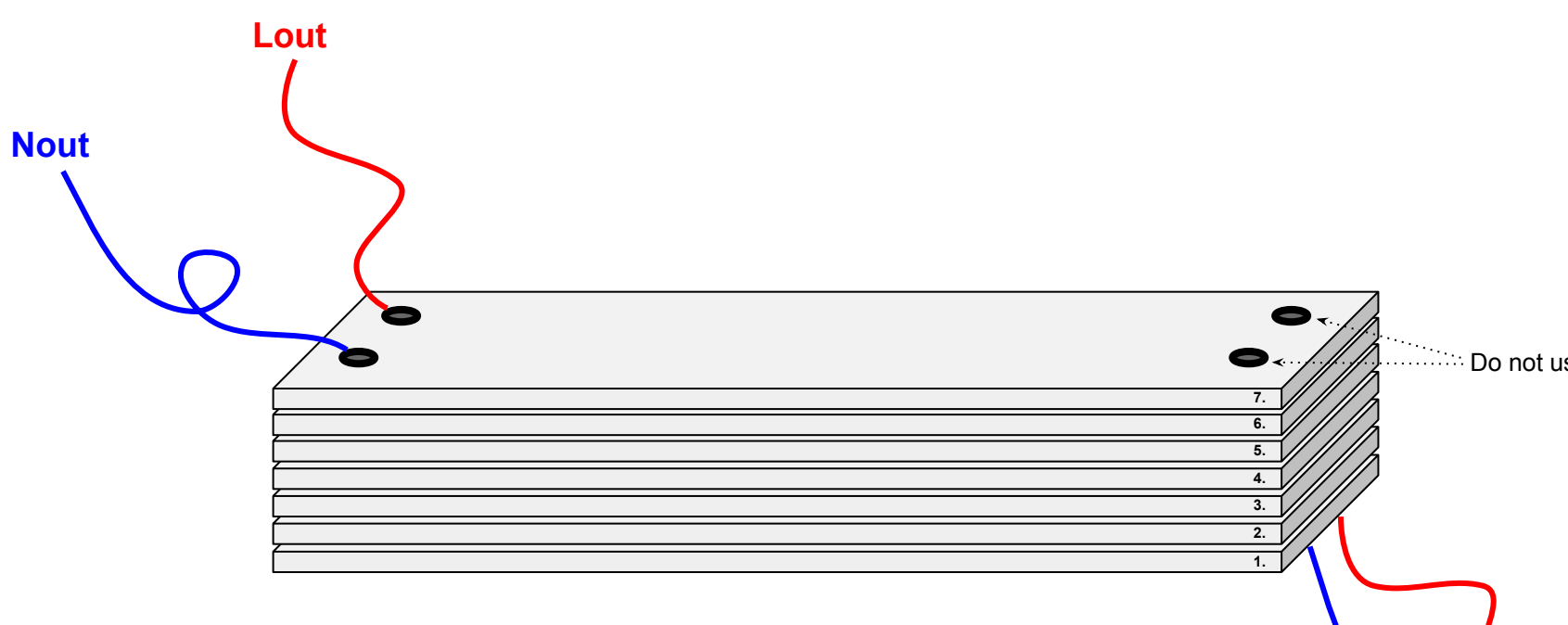


Figure 8: A completed stack of seven Firewall boards with inputs and outputs on opposite sides.

To the left are the dimensions of the Firewall board. The board is configured symmetrically such that the input and output contacts can be stacked without the use of leads.

The Firewall's effectiveness is augmented not only through the use of multiple units, but through their mutual interaction through their surrounding electromagnetic fields as current flows through the boards. Thus, mutual proximity is an added benefit when using these Firewall boards in multiples. For this to hold true, the proper orientation amongst the boards is needed. This is described here.

Best results are obtained when multiple Firewall modules are 'stacked' according to these instructions. Using them in close proximity to one another in other configurations has been shown to reduce their overall effectiveness. Therefore, please follow these instructions and you can't go wrong.

A 'stack' of an odd number of boards will result with the input contacts on the bottom right and the output contacts on the top left. (See the drawings.)

The wiring of such a stack is considered 'series' wiring. The Firewall modules are said to be 'in series' because the output contacts of one board are adjoined electrically to the input contacts of the next board.

The number of Firewall modules in a stack, wired in series, determines the overall silence of the noise floor. The more units wired in series, the quieter the noise floor becomes.

There is a place within the Firewall board's traces where the total cross section of copper per power leg is reduced to 1mm². This section is about 20mm in length.

To increase the overall conductivity, Firewall module 'stacks' can themselves be wired in parallel. The number of parallel wired 'stacks' determines how low the resistance will be. Two parallel wired stacks will have the minimum conductive region raised from 1mm² to 2mm² cross section. Three in parallel will have 3mm² cross section, and so forth.

Thus, with regards to power conditioner construction using the Firewall modules, there are two parameters: the number of series wired units in a "stack" determines the quietness of the noise floor, and the number of parallel wired "stacks" determines the ultimate cleanliness of the most complex chord structure and symphonic tutti accents.

Through experimentation it has been established that best results are achieved when all parallel wired stacks each contain the same number of modules. Thus, if one has stacks of 5 FW modules, using three such stacks will result in a total usage of 15 modules, in three equal stacks of five.

There is no known limit to the effectiveness of the Firewall modules. Our most ambitious project contained 44 units in four parallel stacks of 11 modules each. Such performance is simply sublime and must be experienced to be believed. The natural flow of unobstructed time is re-created with a believability which rivals the very best analogue setups, even if the source is digital.

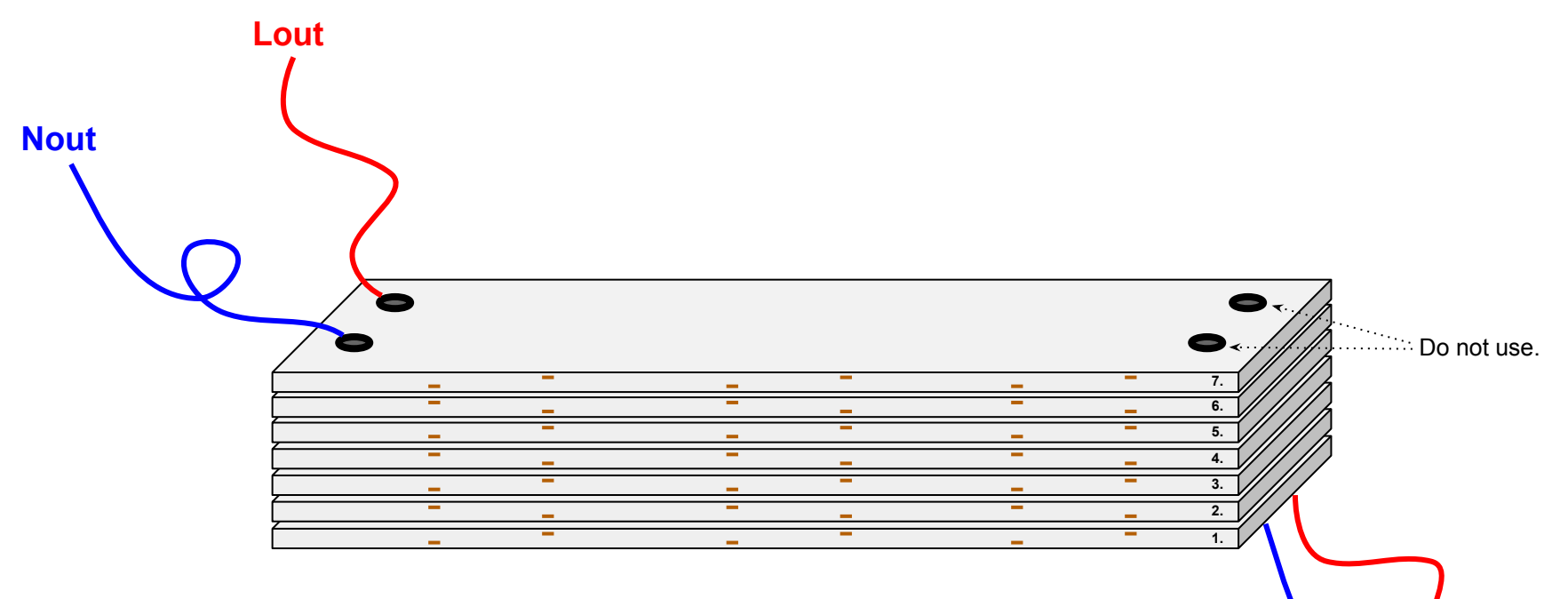


Figure 9: In earlier iterations, there were very small exposed copper traces at the sides of the boards. These resulted from manufacturing process in earlier production batches. When in doubt, cover these with something like Kapton tape. Today, these small traces are removed by laser and subsequently filled with epoxy mask, so it is no longer an issue for any Firewall modules purchased since April 2017.

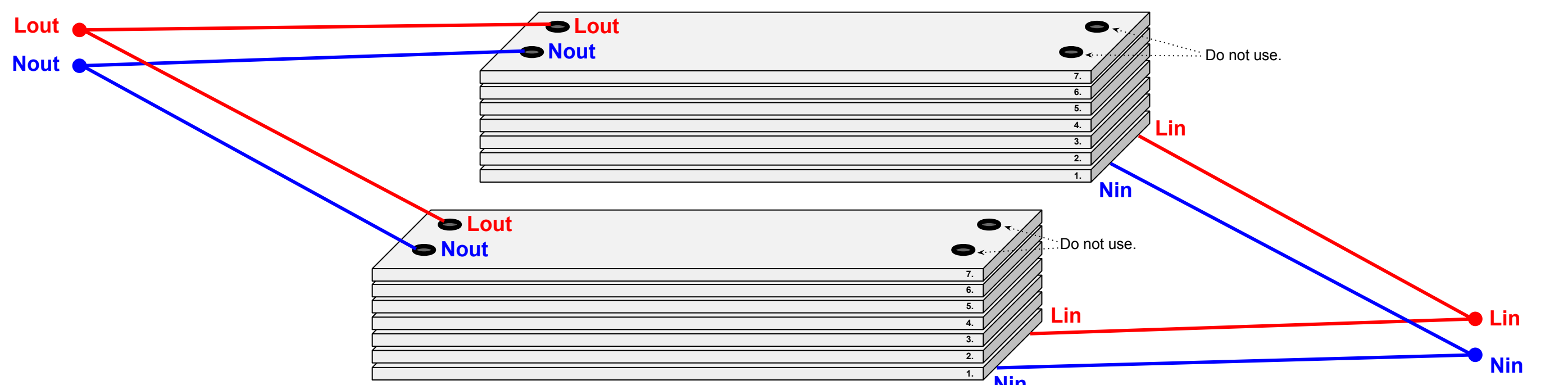


Figure 10: Two stacks of seven Firewall boards with inputs and outputs on opposite sides. These two stacks are wired in parallel. Thus the minimum cross section of conductive trace copper becomes 2mm².

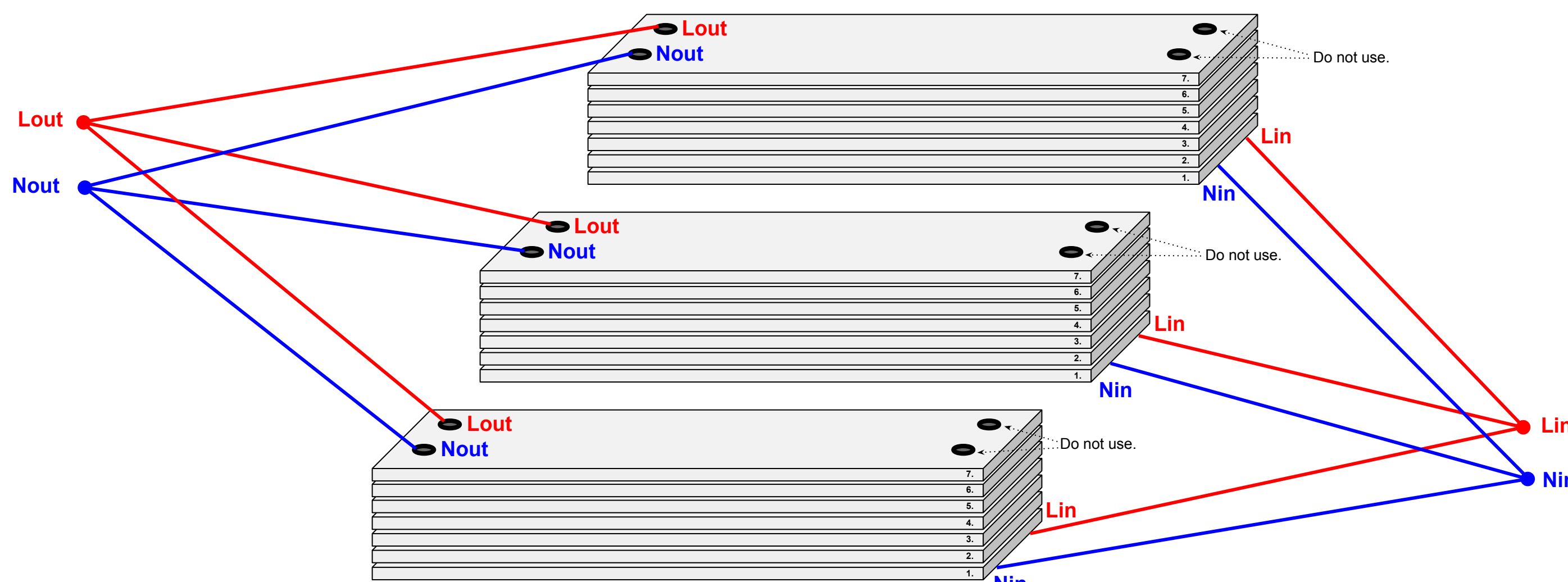


Figure 11: Three stacks of seven Firewall boards with inputs and outputs on opposite sides. These three stacks are wired in parallel. Thus the minimum cross section of conductive trace copper becomes 3mm² for superlative dynamic response, revealing deep clarity and insight into the most complex chord structure. The LessLoss Firewall does not color the sound nor through its filtration method inhibit dynamic performance, unlike capacitors and coils. Any benefit gained in terms only of dynamic clarity and ease of response is equal in all respects to the same benefits gained when using respectively larger diameter wire. The difference here is that as one benefits from this feature of lower resistance, simultaneously the noise drops yet further. Today there is no known limit to the sonic benefits resulting from this functionality. In a system of 4 stacks in parallel of 11 Firewalls per stack, absolutely no undesirable coloration is perceived. Further expansion has yet to be attempted in order to find any negative side effect, and to continue to advance our art.