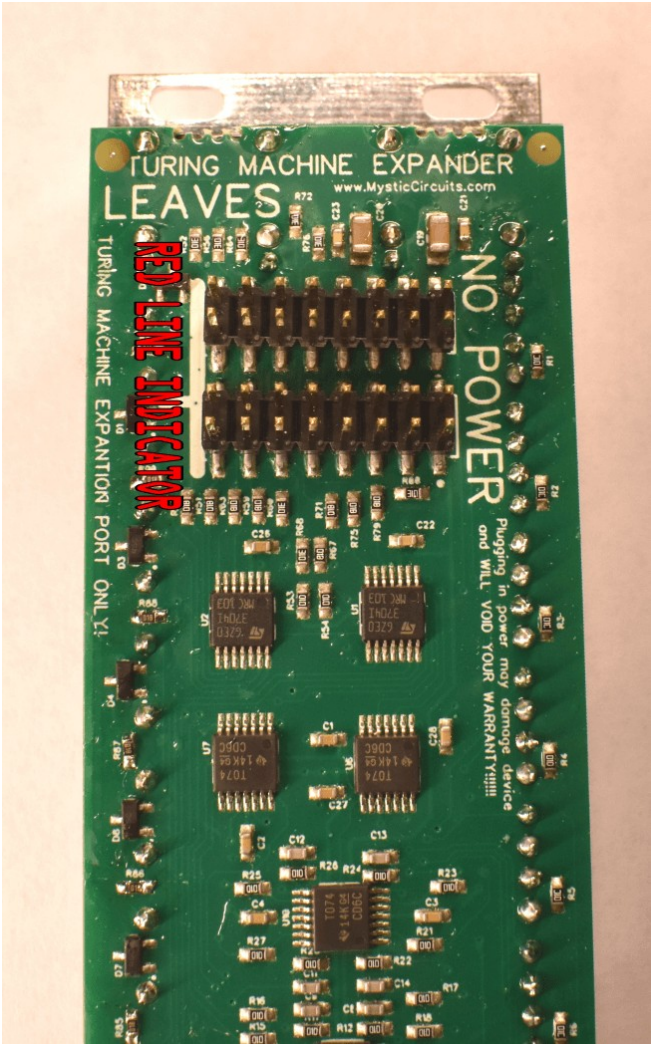
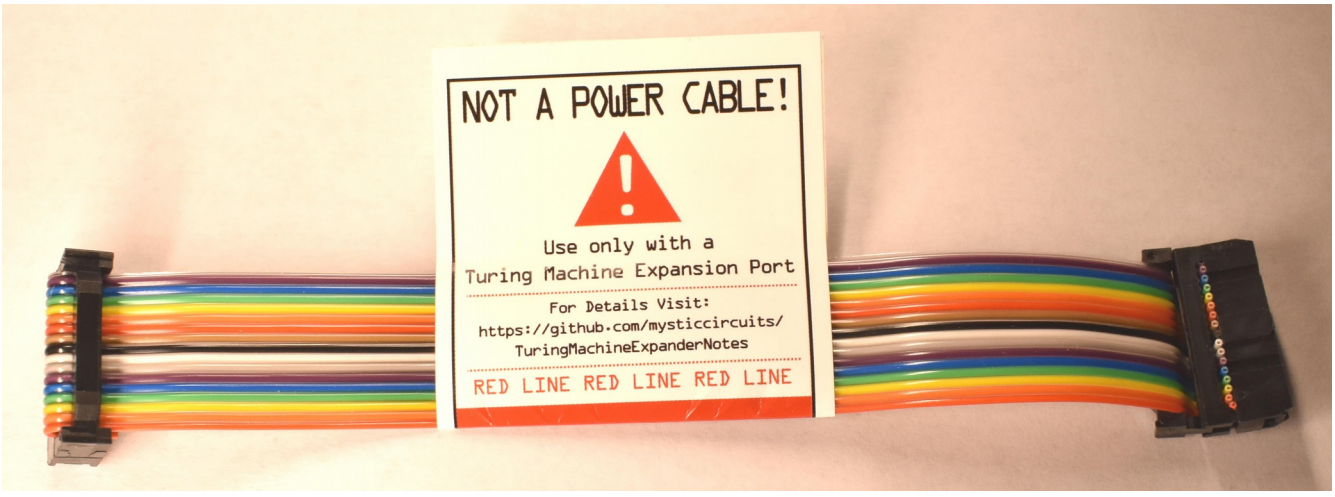
Turing Machine Expander Port Hookup Guide

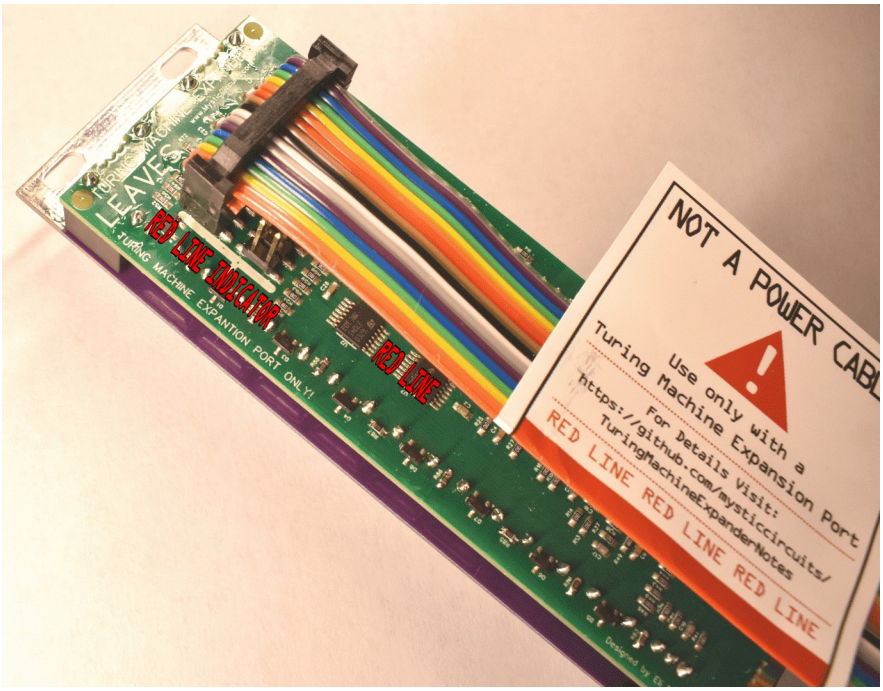
This document is intended to help you safely connect your Turing Machine Expander to any Turing Machine Host module you may have. So far this document is essentially the same as the hookup guide in the Mystic Circuits Leaves Expander Manual but over time I will keep updating and improving these documents. If you would like to know more about how the Turing Machine Expanders work or would like to make your own please consult the other document on this github called **"Turing Machine Expander Notes".**



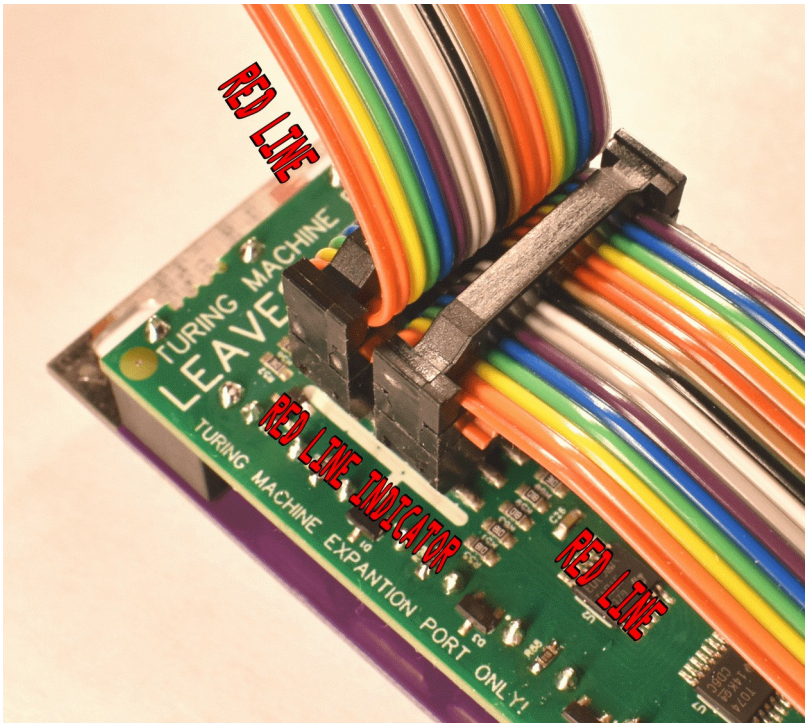
You might notice by now that I have gone through great pains to indicate that the expansion port on the back of Leaves is not supposed to plug into your power rails.

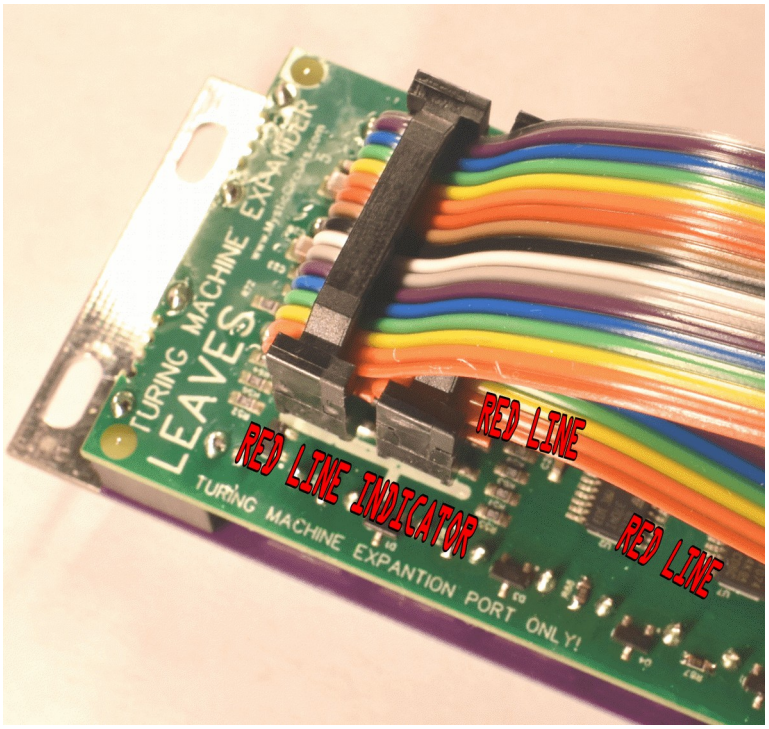
In order to try and remedy the confusion with this issue and also to make daisy chaining expanders a bit less clumsy I have developed a new version of the 16 pin IDC cable intended specifically for use with Turing Machine expanders. Note that you can still use the older 16 pin power cables in a pinch but please be sure you know what you are doing and double check that everything is hooked up as intended. These new rainbow cables share an important feature with the gray and red power cables: the bottom of the ribbon cable is marked with a red wire and doubly marked with a red line on the sticker that is attached. You should treat this red line on the rainbow ribbon cable the same way that you would treat a red line on a normal power cable: it indicates that both ribbons are connected in the right direction. Every Turing Machine Expansion port I have made or come across indicates the direction of the red line either with a thick white line or more explicitly with text saying "RED" or "RED LINE". I have labeled the red line indicator in the upcoming images just to make everything as clear as possible, you may have to zoom in to see the indicators.

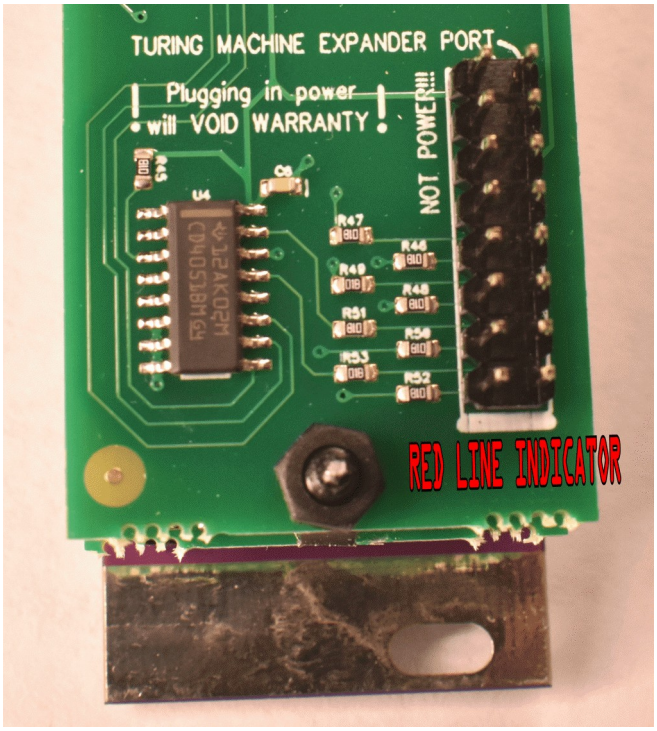




Here you can see we have a Turing Machine Expansion Cable plugged into one of our Expansion Ports. The red line on the cable and the sticker is facing the same direction as the thick white line on one side of the expander port. The cable itself is designed to flow downward from the top of the module to give more room for cables to move around. On top of that the ports on each cable are designed to nest nicely one on top of the other as shown in the images below. This allows for daisy chaining with minimal cable insanity behind the panels although you will still need to fold the cable at least once to connect adjacent modules. If you already have expanders on your Turing Machine, Vert, etc feel free to connect your normal grey and red IDC power cable to this port along with the Turing Machine Expander cable but just make sure that the red lines on both cables line up with the indicator on the Leaves PCB.

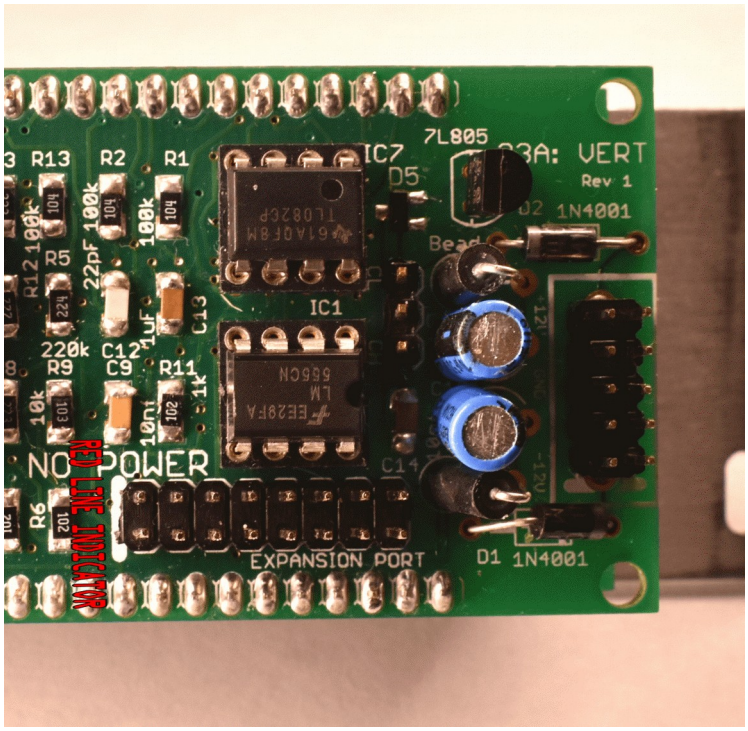


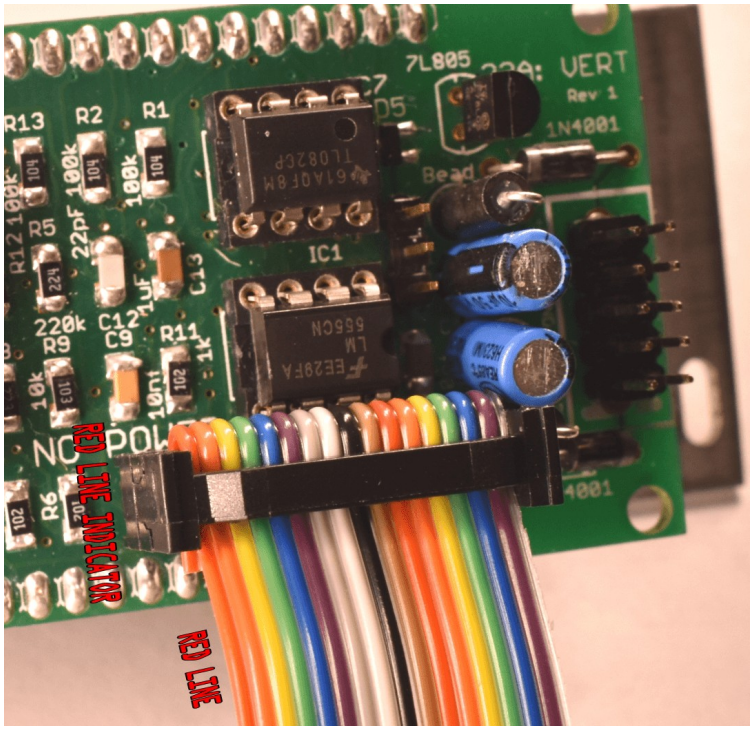


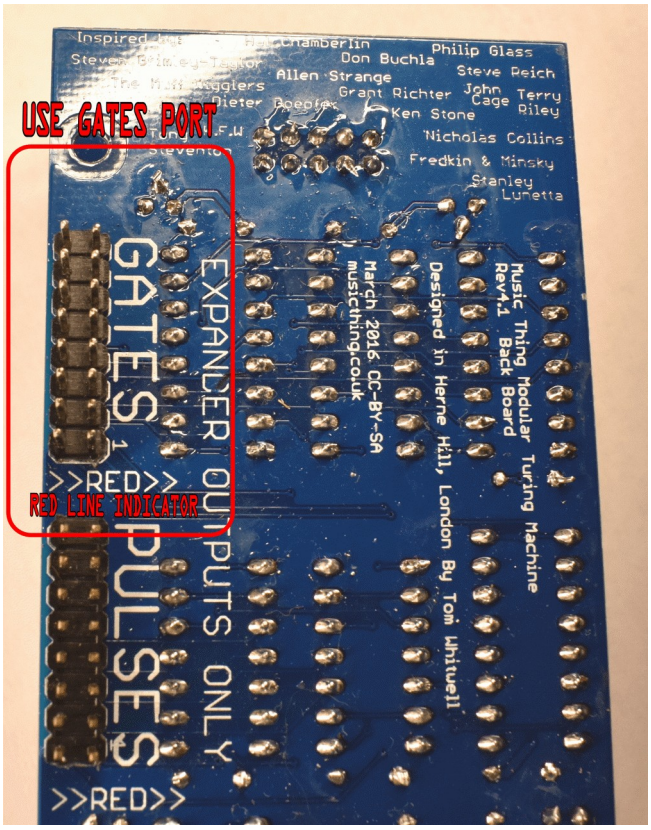


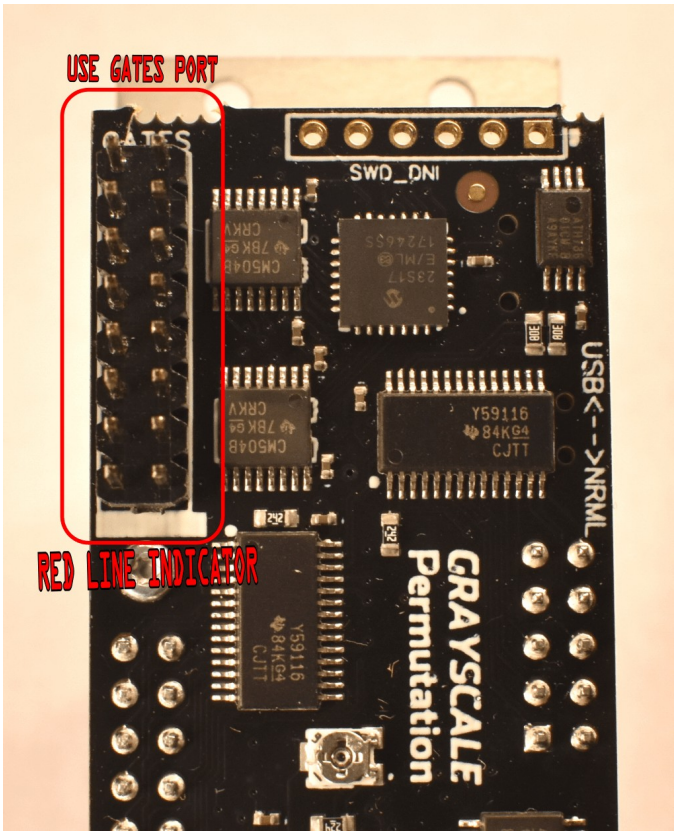
Above you will see the Turing Machine Expander Port for Tree and below you will see the Turing Machine Expander Port for Vert. Notice that both ports have a thick white line at the bottom of the port indicating the direction of the red line on the expander cable. As always make sure your red line on the cable matches this white line on the PCB.

Keep in mind that the expander port image below is for a Vert mk. 1, we have plans for a sequel module in the future so the port may look different on upcoming versions.









Above and to the left is the back of a Turing Machine Mk.2, above and to the right is the back of a 6HP Grayscale Permutation. You will notice that both modules have an expander port labeled “gates” which is intended to connect to all of the current Turing Machine Expanders except for “pulses”. When confronted with any module that hosts Turing Machine Expanders that has multiple expansion ports always use the one that is labeled “gates”. Notice on the bottom of the Turing Machine’s port there is a label that says “>>RED>>” and on the Permutation expansion port there is a thick white line on the bottom of the port, both of these indicate the direction of the red line on the cable. Below you can see each port with an expansion cable plugged in.

In general you should be able to extrapolate to any other modules that incorporate Turing Machine Expanders using these images as examples. If you ever come across a module where the expander connection process isn’t obvious please get in touch with me so that I can add any relevant information to this document and hopefully help out other users. I plan on using this Github page to compile all information that I have found relevant for Turing Machine Expander use and design. Again for reference the link is:

https://github.com/MysticCircuits/TuringMachineExpanderNotes