



Wiring Pyrotechnics

There are 3 ways in which you can wire pyrotechnics. This document is designed to outline the differences, benefits and disadvantages of all three methods.

The most obvious wiring method is direct connection, this is simply where a cable is placed between one effect and one output on the controller, this gives the user the most flexibility because the operator has the option of de selecting any of the effects from the firing sequence. The disadvantages are that this method requires a lot of cable to be run and most controllers are very limited to the amount of channels they have available.

The next two methods are primarily for when you want to fire multiple effects at once on one channel.

Parallel Wiring

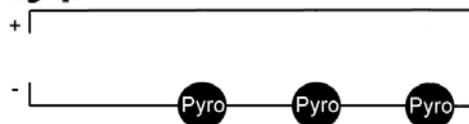
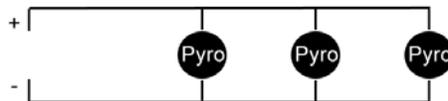
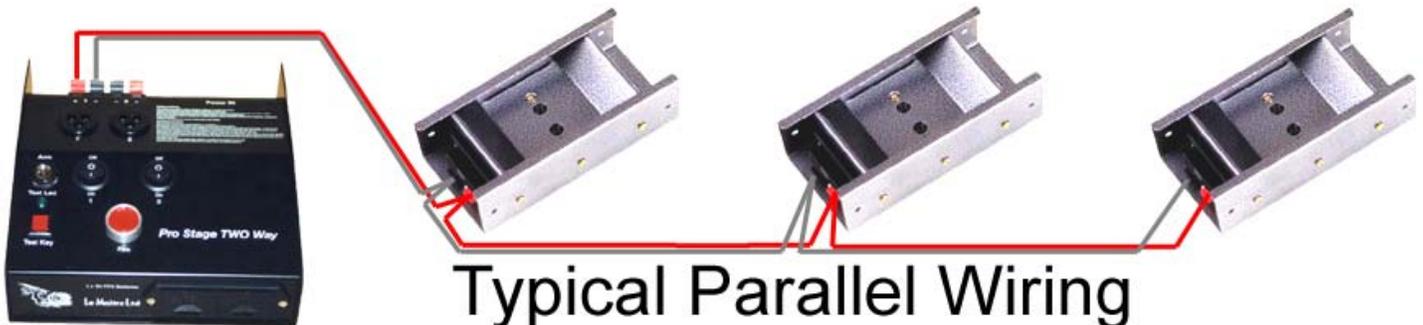
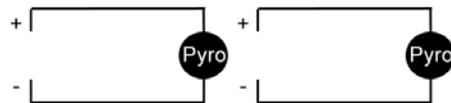
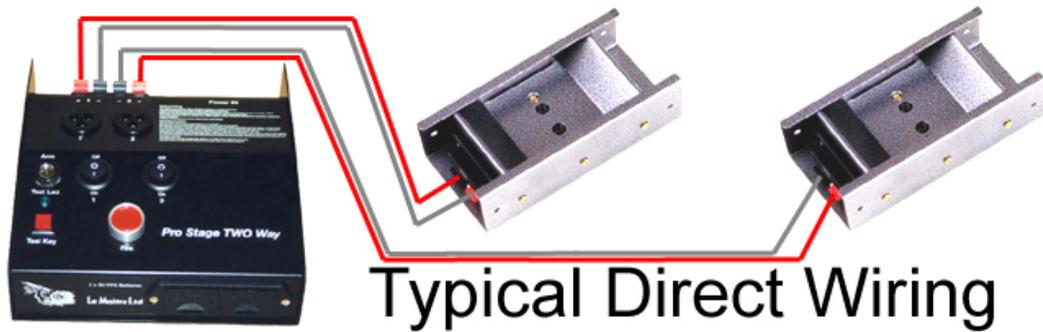
Wiring pyrotechnics in parallel is the most common way of wiring pyrotechnics because it is relatively straightforward and easy to understand. Each pyro connection requires 2 connections, much the same as a battery has positive and negative and the mains has live and neutral. The output from the controller goes into the first effect and then from the first effect on to the next and so on. This method is capable of firing fewer igniters than series (depending on the type of controller) because a bunch of paralleled igniters will require significantly more current to fire. The main drawback with this method is the testing procedure. When the controller tests a pyrotechnic circuit it essentially performs a continuity check. With parallel circuits only one effect in the circuit needs to be correctly wired and functioning properly for a pass to be given. As an example you have a circuit of 10 effects and 5 of them have been incorrectly wired and 5 of them are fine, when you test the circuit you see the test LED light to give you a pass. When you press the fire button only the 5 correctly wired effects will fire.

Series Wiring

Series wiring is slightly more complicated but the preferred method. When you make a series circuit you essentially create one big loop and splice the pyrotechnics into the loop. The disadvantages are that your circuit is vulnerable, if you have a cross fire and one of the effects is spent, the loop will have been broken and none of the effects will fire. This sounds unacceptable but in reality it very rarely happens and there are ways you can protect pyrotechnics from cross firing. The biggest advantage with series wiring is that when you have a pass test LED, the test current is passing through all of the effects in the circuit, if one of the effects is malfunctioning or incorrectly wired, the fault is immediately visible to the operator who can then investigate the problem. You can also use a multi meter on the circuit to check you have the correct resistance.

IMPORTANT – YOU SHOULD NEVER MIX SERIES AND PARALLEL WIRING. (Because weird things start happening!)

On the next page are some diagrams to help you better understand the differences between the three methods. At the end of the day which ever method you use is entirely up to you and it all boils down to personal choice.



Please note that polarity is irrelevant to pyrotechnics, as is ac or dc firing voltages. If wiring Prostage II effects in series, you can simply connect the 2 igniter wires instead of the flash pods as is shown above.