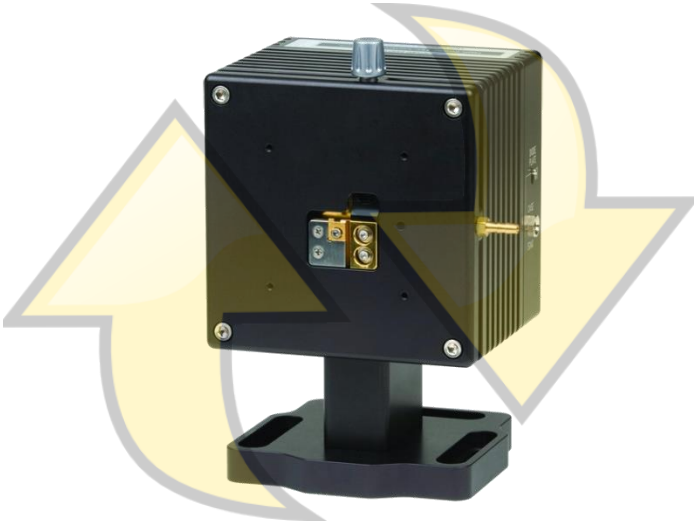


arroyo instruments

# APPLICATION NOTE AN-017

## Reversing the Polarity of a 242

**June 13, 2019, Rev A**

The 242, as shipped from the factory, has the anode as the body of the laser and the cathode as the tab. Some c-mounts are built with the opposite configuration. This app note gives two options for addressing this issue.

**Reversing the Wires in the Cable**

One approach would be to simply reverse the laser anode and cathode wires in the DB9 laser cable. If using the Arroyo 1220B cable, it's relatively simple to remove the metal hood, then de-solder and re-solder a few wires to reverse the polarity.

Rewire as follows:

| Pin | Color | Move To Pin |
|---|---|---|
| **4** | Black/White | 8 |
| **5** | Black | 9 |
| **8** | Red/White | 4 |
| **9** | Red | 5 |

Following a similar change if you are using your own cable.

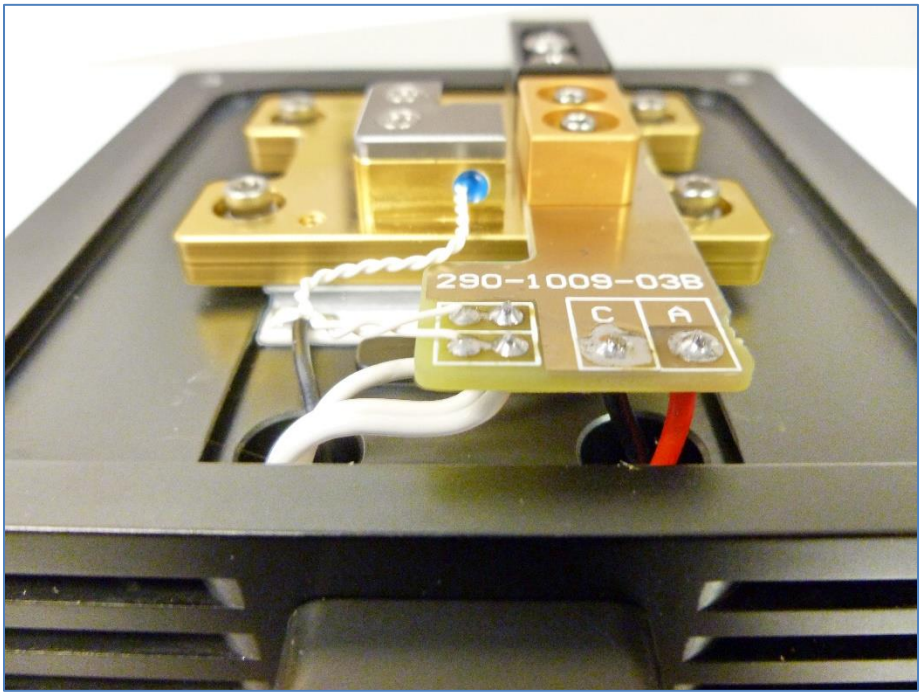
A similar change would be to leave the 1220B cable unmodified and instead build an adapter cable that reverses the polarity. By adding the adapter cable to the end of the 1220B, you can reverse the polarity, and then easily return to normal by simply removing the adapter cable.

**Reversing the Wires in the Mount**

Modifying the 242 is a bit more complicated, but still straightforward. It just requires a bit more disassembly than the cable modification above.

Below is a photo of the 242 with the front cover removed. Notice the 290-1009-03B PCB and “C” and “A” wire connections… this is where you will be making the reversal.


Here is another close-up view of the “C” and “A” terminals:



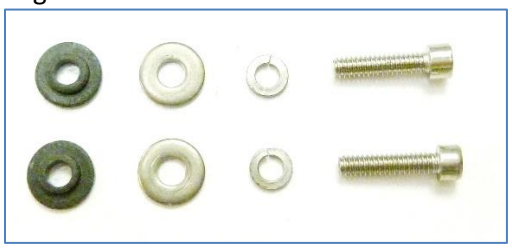
The process will be to disassemble the 290-1009-03 PCB from the cold plate, reverse the wires, then reassemble.

*Disassembly*

1. Loosen the top knob to release the foot. Loosen until the foot stops traveling up. It is okay to remove the knob entirely.
2. Remove the front cover by removing the four socket head cap screws on the face of the mount.
3. Remove the two socket head cap screws that are attaching the clamp block and PCB to the cold plate. Do not lose the three washers (Split Ring Lock Washer, Flat Washer, and Plastic Shoulder Washer) with each screw.
4. Set the clamp block aside.
5. Lift off the PCB, taking care not to strain the thin white thermistor wires.
6. Using a soldering iron, unsolder the red and black wires from the PCB.
7. If you have solder wick or a solder sucker, remove the solder from the PCB holes… will make it easier to reinstall the wires.
8. Solder the wires into the opposite holes (red to “C” and black to “A”).

*Reassembly*

1. Place the PCB back into proper position, place the clamp block on top, and insert the two screws. Make sure all three washers are on each screw. Split washer on top, then flat washer, and finally plastic washer with lip facing towards block.



2. Make sure the plastic shoulder washers are properly seated into the hole and then tighten firmly.
3. Reattach the font cover. You might need to hold the foot down to allow the cover to seat properly.
4. Reinstall the four screws holding the cover on.
5. Reinstall the knob for the foot clamp.

When turning the laser on for the first time, recommend you start with the current at zero and slowly ramp up to ensure all wiring is correct.