

Sometimes serial connections can be a bit confusing as one device's **+** terminal may be wired to another device's **-** terminal.

The tendency, the wrong way, is to connect all **+** terminals together and all **-** terminals together. That is called a parallel circuit and that's NOT what we are shooting for with a 4-20mA loop.

In a series circuit, the devices are connected end to end or daisy chained. The entire circuit creates one continuous "loop" with no branches.

When connecting more than one device in a loop (in series) with a Power Source (power supply or battery), the key thing is what terminal each device "sees" ON THE POWER SOURCE, NOT how each device "sees" the other device's terminals.

In a properly wired series circuit, from the perspective of any specific device in the loop, the other devices can be seen purely as wires, because that's effectively what they are. Just like wires, each device "passes" the current on down through the loop.

The most important thing is that each device's **+** (plus/positive) terminal, if followed out through wire and other devices, arrives at/"sees" the POWER SOURCE's **+** terminal.

(To express it for the device's **-** terminal, if followed out through wire and other devices, the **-** connection arrives at/"sees" the power source's **-** terminal.)

See Figure 1.

If you follow the connection out of Device 1's **+** terminal, you arrive at/"see" the Power Source's **+** terminal (NOT the P.S. **-** terminal).

If you follow the connection out of Device 2's **+** terminal, you "pass through" Device 1 as if it were just another piece of wire, then you arrive at/"see" the Power Source's **+** terminal.

If you follow the connection out of Device 3's **+** terminal, you "pass through" Device 2, then "pass through" Device 1 as if they were just another piece of wire, then you arrive at/"see" the Power Source's **+** terminal.

Figure 1.

