Doug Shepherd, El Cajon, CA in response to a discussion of Marc Zeitlin and Andrew Anunson about OLC-1 connectors and

“As an EE, though not an actual connector expert, my understanding is that at least two things are required for a reliable connection between two wires.

1) An air-tight (oxidation proof) connection between the two wires.

2) Proper strain relief for both wires.

There are other figures of merit (such as low resistance/impedance), but this is a low voltage, low current, high vibe situation, so the requirements listed above are the most relevant.

It's possible the OLC-1 connector provides an air-tight connection between the two wires, but I suspect they don't. If there's enough pressure between the mating parts to keep air out of the joint, it's going to be cold-welded together, and you won't be able to disassemble it easily. A properly crimped contact can't be removed without breaking the wire, but the OLC-1 connectors can easily be removed by backing off the screws. I think that proves that the wires aren't cold-welded together, which means air can get in, which means the connection will eventually oxidize and fail. Proper connector contacts also use multiple spring contacts, sliding joints that scrape out air molecules as the connector is connected, and often gold-plated surfaces to achieve long-term oxidation-free performance between the contacts themselves.

As far as the second point is concerned, when a mechanically rigid part (the connector) and a mechanically softer part (the wire) are connected together, a strain point arises in the soft part right where it's clamped by the rigid piece. ALL of the relative movement between the pieces, caused by movement, vibration, or temperature expansion and contraction, will be focused at this exact point, and a fatigue failure will eventually result. A proper strain relief spreads the strain out so it occurs over a much longer piece of the wire, greatly increasing the fatigue life of the joint. A proper crimp connector has a wire entry shaped like an exponential horn, the ideal shape for strain relief, and often a second crimp point on the insulation of the wire, but an OLC-1 connector doesn't provide any strain relief at all. A relatively heavy connector that doesn't gang multiple connections together, or have any external support, like the OLC-1, increases the strain on the wires and means failure will occur earlier.

Proper connectors are also mechanically secured (often with a plastic spring tab you have to press to pull the connector apart), and as Marc points out, the OLC-1 has no mechanical security. If one of the screws backs out, you've lost your connection.

Connectors seem pretty simple but the technology has come a long ways -- and yet the connectors are still the most likely thing to fail in most electronics assemblies. Connector failures are often also intermittent and difficult to diagnose. Don't ask for the kind of trouble a cheap, obsolete connector technology will give you.