

# TECH TIPS – Cable Management: How to Prevent the Rat's Nest

## Application Challenge

There are so many wires and cables in my equipment design that it's becoming an assembly line and after-sales maintenance nightmare. How can I simplify the rat's nest?

## Have You Thought of This?

Fortunately, there are several practical solutions available to you.

Discrete wire: if you have to use discrete wire but can't change the connectors, consider tie-wraps to bundle wires together, or attach color-coded labels/markers to identify which wires perform what functions. Color-code the mating connectors to ensure the user knows where to attach them.

If you can change the connectors, consider using modular versions. For example,

- 3M™ Wiremount Socket CHG Series connectors enable you to terminate discrete wires up to 64 conductors in a convenient module and to plug them into standard boxed or latch/eject headers. The connector is available in single and dual row versions in a choice of plating options and uses the proven IDC contact for reliable terminations.
- 3M Mini-Clamp II Connector makes terminating discrete wire as easy as squeezing a pair of pliers. The 2mm socket and plug connectors use the proven IDC contact for reliable terminations in 3 and 4 positions. On the boardmount side, choose from 1, 2 or 4 socket modules to manage cables.

Ribbon cables: ribbon cables take the guess work out of cable harness design. Simple and quick to terminate, cable assemblies using ribbon cable provide a convenient way to help reduce the complexity of discrete wire assemblies. Ribbon cable from 3M is available in grey, color-coded, twist and flat and ground plane as well as jacketed and shielded versions for up to 64 conductors. Compatible sockets include the 3M Wiremount Socket Series 3000 and 89100, as well as 3M D Ribbon Wiremount Socket 3000 Series and 3M Delta Sub (D Sub) Connectors 8000 Series.

## 3M Tech Tips

- Ribbon cables can be zipped enabling custom pin-outs to be designed.
- When using flat ribbon cable and CHG Series connectors from 3M, remember to notch the cable before termination. Cable notchers are widely available to prep the cable before assembly.
- Use cable clamps to neatly 'stack' multiple flat ribbon cable assemblies.
- Mark cables or wires using 3M Cable Markers.
- Code or key your connectors so each component uniquely fits its mating connector – refer to the Tech Sheet of the particular connector to check options available.

## Additional Resources

### *Products*

[3M™ Cables](#)

### *Product Training Modules*

[3M™ Cable Matters](#)

[3M™ 2mm SCI Cable Assembly Development Kit](#)