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# HOW TO SELECT, INSTALL FLEXIBLE CONDUCTORS

Five steps for achieving high-quality connections.

By Bob Klaviter, Panduit Business Development Manager

**>>** High strand-count flexible conductors are increasingly being used in control panels because they meet growing power requirements, and at the same time are easily routed and managed within tight enclosure spaces. Consistent, high-quality termination of these conductors using copper compression flex connectors helps ensure safe, reliable operation to reduce risk within the physical infrastructure.

When properly selected and installed, the function of a flex lug is transparent in the overall operation of a product. However, when improperly selected or installed, users can incur rework, recalls and downtime, which could result in decreased productivity and profitability. The following process will help you effectively and efficiently achieve high-quality connections in flex conductor applications.

**1. Select high-quality flex lugs made from 99.9% pure copper and tin-plated to a nominal thickness of 200 microinches.** Such connectors offer high electrical conductivity and long-term reliability. For example, copper Compression Flex Lugs from Panduit Corp., an Encompass™ Product Partner in the Rockwell Automation Partner Network™, work with a variety of flex

conductor types, including Class G, H, I, K, M and Diesel Locomotive.

**2. Select the optimum flex lug type by considering any restrictions or conditions that may impact the installation.** For example, narrow-tongue lugs facilitate tight spaces or small, dense enclosures, whereas two-hole lugs benefit applications experiencing high vibration.

A variety of flex connector configurations are available to meet a range of control panel applications and spaces, including short and long barrel; one- and two-stud hole; narrow tongues; straight, 45° and 90° bent tongues; and flared and beveled conductor entry.

Also consider lug types that are approved to terminate a range of flex conductor types using a single connector. This offers application flexibility and reduced inventory cost.

**3. Verify that the flex connectors are UL-approved.** Standard UL 508A for industrial control panels specifies that pressure wire connectors shall comply with Standard UL 486A-486B for power applications. UL testing and documentation helps to ensure safe, reliable terminations with flex conductors.

**4. Use crimping tools with circular crimping dies to achieve a termi-**

nation that results in a solid copper mass without cutting individual fine strands of wire (see Figure 1). Use of circular crimping dies also enables post-crimp inspection through the embossing of the die index number into the lug during crimping (see Figure 2). To select the proper crimping die, match the color code of the die and lug.

**5. Consult your supplier for expert training on proper crimping techniques.** In addition to quality materials, styles, approvals and crimping tools, a high-quality installation is key to achieving reliable, secure connections. □

Rockwell Automation Encompass Product Partner Panduit Corp., Tinley



**Figure 1.** Crimping tools with circular crimping dies result in a solid copper mass for greater conductivity.



**Figure 2.** Circular crimping dies emboss the die index number into the lug during crimping for easy inspection.

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