

“Why Custom?”...

The Fundamental Question about Cables

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While it might be trite to say life is full of choices, this tried and true saying certainly applies to the specialized world of electrical cable. A project engineer can choose off-the-shelf cable – the manufacturer's way – and then adapt it to specific needs, or that same engineer can choose custom cabling designed for a specific purpose – the project engineer's way. There are advantages and disadvantages to both choices. Let's review these below.



The Cable Manufacturer's Way

By their very nature, prefabricated cable products do not give users the chance to elect any of the many choices in the finished product. Control of design, tolerances, materials, and manufacturing techniques belong to the manufacturer. This isn't necessarily a bad thing. These products have proven themselves to be acceptable solutions to most applications, and there can be many advantages to prefabricated cables including the following:

- Immediate availability.
- Manufacturing efficiencies.
- Easy prototyping.
- Cost effectiveness.

The downside to using standard products can include:

- Standard products can appear to be "bolt on" rather than designed in.
- Standard products tend to promote the cable manufacturer's brand identity rather than that of the final product.

- The packaging may not be well suited to the user's needs.
- Availability is at the discretion of the manufacturer or distributor.

The Project Engineer's Way



Custom cable products are designed and manufactured to suit specific applications and needs. They are an integral part of the system and its performance – rather than an accessory to the system. In a world where aesthetics can count as much as function, such details cannot be overlooked.

Following are advantages to custom cable products. They allow the designer to:

- Optimize the conductor count, size, and stranding.
- Choose the materials of construction (insulation, shield material, jacketing material) that best suit the application.
- Integrate various functions, such as power, signal, shielded sub-assemblies, coax, optical fiber, and breather tubes, into one cable.
- Define electrical parameters and tolerances.
- Provide applicable test data that will support the end product sale such as flex test data, temperature performance, and chemical resistance.
- Include cable products that will build the brand identity of the end product. Examples include color matching, custom cable legends, and the specific "feel" or texture of the cable.
- Provide specialized agency recognition or approval.
- Control manufacturing processes and material sources, which are especially critical in medical applications.

Although custom cable products have many advantages, they also have some limitations including the following:

- Short runs of custom cables consume engineering time, setup time, and machine time.
- There are practical limits to minimum run quantities. For example, to achieve 10 feet of a custom cable, 1000 feet may have to be constructed.
- Since custom products are made to order, lead times may be an issue. Lead times vary by manufacturer but are typically six to 12 weeks.
- Custom products may require materials that have large minimum purchases or are not

readily available.

- Custom cable designs can result in restricted sourcing.
- Custom cable providers may not provide one-stop shopping unlike distributors who can offer a wide variety of cable constructions from several manufacturers and sometimes complimentary products such as connectors.
- Custom products are not returnable usually.