

MICRO STYLE CONNECTORS

Cristek is the most dynamic manufacturer of Microminiature connectors in the world today! As a niche supplier, our focus on this high reliability and ultra density product enables us to consistently provide our customers with the best value solutions for their demanding applications.

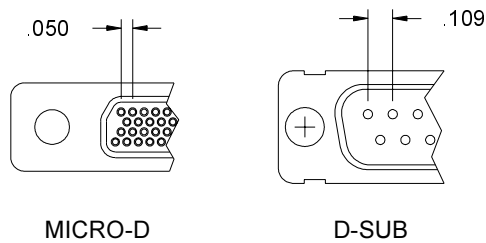


Figure 1-1.

The advantages of the Micro concept are impressive. By halving the contact center spacing from 0.109" to .050", the contact density is increased four fold!

Figure 1-2 below provides a graphic depiction of the increased densities that can be realized by this product. This shows that in roughly the same panel space a user of a 25 contact D-Subminiature connector can get 100 Micro contacts.



Figure 1-2.

By also halving the mating depth, the volume and weight are reduced nearly eightfold! The resultant shorter signal paths are advantageous in high-speed digital applications. This product has been in use in military and aerospace applications since the 1960's and has proven itself to be remarkably reliable and durable. The purpose of this document is to provide a basic technical discussion and overview of this proven and versatile contact system.

While there are many types of .050" pitch interconnect systems available today in commercial applications, the reverse gender contact system found in both QPL (M83513) and its MOTS cousins offer the best combination of electrical performance, environmental choices, reliability and breadth of connector options. Although the Micro has been in use for more than 35 years there is still some confusion about the basic technology. While most two-piece connector systems use an exposed male pin contact and recessed socket spring contact, the Micro incorporates "reverse gender" contact design. Instead of the socket being the spring member, recessed in the plastic housing, the Micro system includes a recessed, male spring contact. The Micro socket is then the exposed contact member and is fabricated as an extended hollow tube to mate

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with the male spring member. Figure 1-3 depicts the difference. A full understanding of these basic fundamentals is critical for success in the introduction and continued use of Micro within your applications.

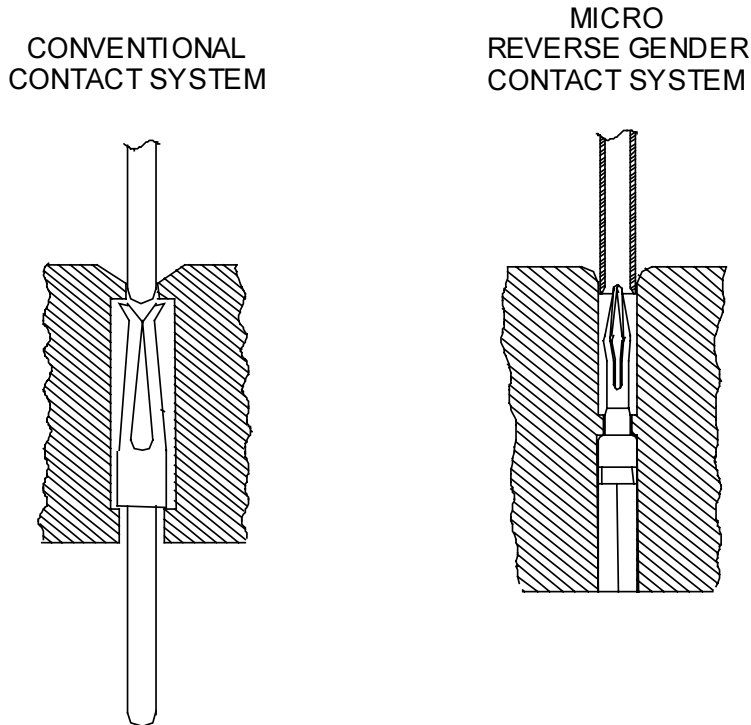


Figure 1-3.

A conventional male pin on .050" centers requires a recessed socket contact that will accept the pin while allowing sufficient space for the socket to "spring". To achieve this, and still have enough insulator dielectric material between adjacent contacts, the pin must be reduced in size. This reduction results in a corresponding loss of the pin's mechanical strength, making it easy to bend and leaving the connector pair susceptible to mis-mating. The male pins in such conventional applications are usually .018 square or .020 diameter. In addition to being fragile, the minimal mass of these pins reduces the current carrying capability of the contact.

By contrast, the exposed member of a "reverse gender" connector system is the sturdier socket contact with nearly twice the outer dimension of the male pin. The pin, which is the spring member of the system, is recessed into the individual insulator cavity, where it is protected. The design of the sockets makes it difficult to mis-mate the connectors or to crush the male spring pin. Both contacts in the Micro system can accommodate up to 24 AWG wire. The greater material mass results in current carrying capability nearly double that of the conventional system.

While Micro connectors are sturdier than their conventional counterparts, they are by no means "gorilla-proof". Among common mistakes when dealing with Micro connector systems are:

1. Probing the male spring member with a single male pin, which will damage it. In worst cases, you may probe with single mating socket, but it is always best to mate two full connectors to avoid contact damage. (Another solution to this problem is provided in a Cristek product offered in Section 1.3 Micro D Hardware and Accessories.)
2. Specifying a "plug" when a "receptacle" is really needed or vice versa. There is often confusion among users, manufacturers and distributors over which connector half is the plug and which is the receptacle. This confusion can be easily avoided once the "reverse gender" basics are understood, and the performance benefits greatly outweigh the semantic drawbacks. In Micro connectors, the receptacle connectors carry the socket; or, to put it more succinctly: "the pin is in the plug".

Micro connectors are most commonly used in the "Micro D" configuration specified by M83513. This is an extremely versatile contact system and it is available in a variety of layouts and termination styles. The socket design is common to all manufacturers, but each manufacturer may have a custom-designed and fully tested pin spring contact. All pin contacts will mate to the common socket contact. The versatile micro system is available in: rectangular, strip, and circular connectors for wire-to-wire, wire-to-board, rear and front panel mount, board-to-board, surface mount, and through-hole applications utilizing 24 AWG through 32 AWG wire.

The Micro interconnect system is the most flexible, diverse and best performing .050" pitch product available today. Recent manufacturing advances have made Micro connectors more competitive with commercially available high-density products. We encourage you to consider the "Big Performance" available in this deceptively small package!

The following section of this catalog includes data sheets on all Micro products that were appropriate to include at the time of publication. Over 75% of Cristek's business is derived from customized versions that become de facto standard products so please contact the factory if what you require is not seen here. If these items are not dense or small enough for your application, please refer to Section 2.0, Nano Connectors. These products incorporate the same reliable and proven reverse gender technology but are based on a 0.025" pitch.

TERMINATING THE MICRO....***A JOB FOR PROFESSIONALS WITH 20/20 VISION AND LOTS OF PATIENCE***

Most Micro applications are wire-to-board or wire-to wire, which means that someone has to terminate all those wires into an area that appears capable of accepting only half as many wires as contacts. Because of the intricate procedures required to assemble the Micro, the crimp contacts in them are permanently installed and encapsulated by the manufacturer, so you don't have the option of crimping the wire and installing it yourself. M83513 part numbering provides limited types and lengths of wire in pre-assembled connectors, which is fine if the finite mil spec options meet your application needs. If not, you have two options: you can order connectors with solder cups and terminate them yourself or you can have the connector manufacturer pre-wire the connectors to your specifications.

Cristek is pleased to sell you connectors with solder cup terminations but we suggest you consider the following before making your choice:

- 1) Can your system accept the added weight of the solder necessary to terminate the wires?
- 2) Do you have space limitations? Solder cups extend up to .200" beyond the rear of the connector shell. Pre-installed, crimped wires can be bent immediately at the back of the connector's shell and if you are really tight on space we can often modify the connector shell to even further reduce the profile.
- 3) Are you utilizing your company's resources to their best advantage? Many companies have downsized and focused on core competencies to remain competitive. Is building cable assemblies your core competency?
- 4) Is it practical to require your assembly personnel to solder wire and possibly shields into such a tight space? We have found that when there is a lot of shielding involved in the wire it is almost always unsuitable to go with the solder cup approach.

May we suggest that you discuss your wiring needs with us? We'll not only provide engineering advice on the best way to terminate your connector, but we'll quote you a price for a completed assembly produced exactly to your specification. We'll work with just about any kind of wire 24 AWG or smaller, as well as twisted/shielded bundles, flex circuitry and backshells.

We'll assembly and test a turnkey cable assembly for you. We are not a commodity cable assembly house. However, in an assembly with Micro-D and/or D-Sub components, we offer the best value and source for the job. We will integrate other suppliers' connectors, switches or other devices into the assembly so we save you time and money while increasing reliability!

