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DOCUMENT SUBMITTED TO: IEEE 802.3cg Task Force



SOURCE:	Sterling Vaden		
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Single Pair Connectors	A single pair modular connector for large AWG cables.		
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ABSTRACT: Overall description of a modular plug designed to terminate 18AWG shielded single pair cables.

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Supporters:

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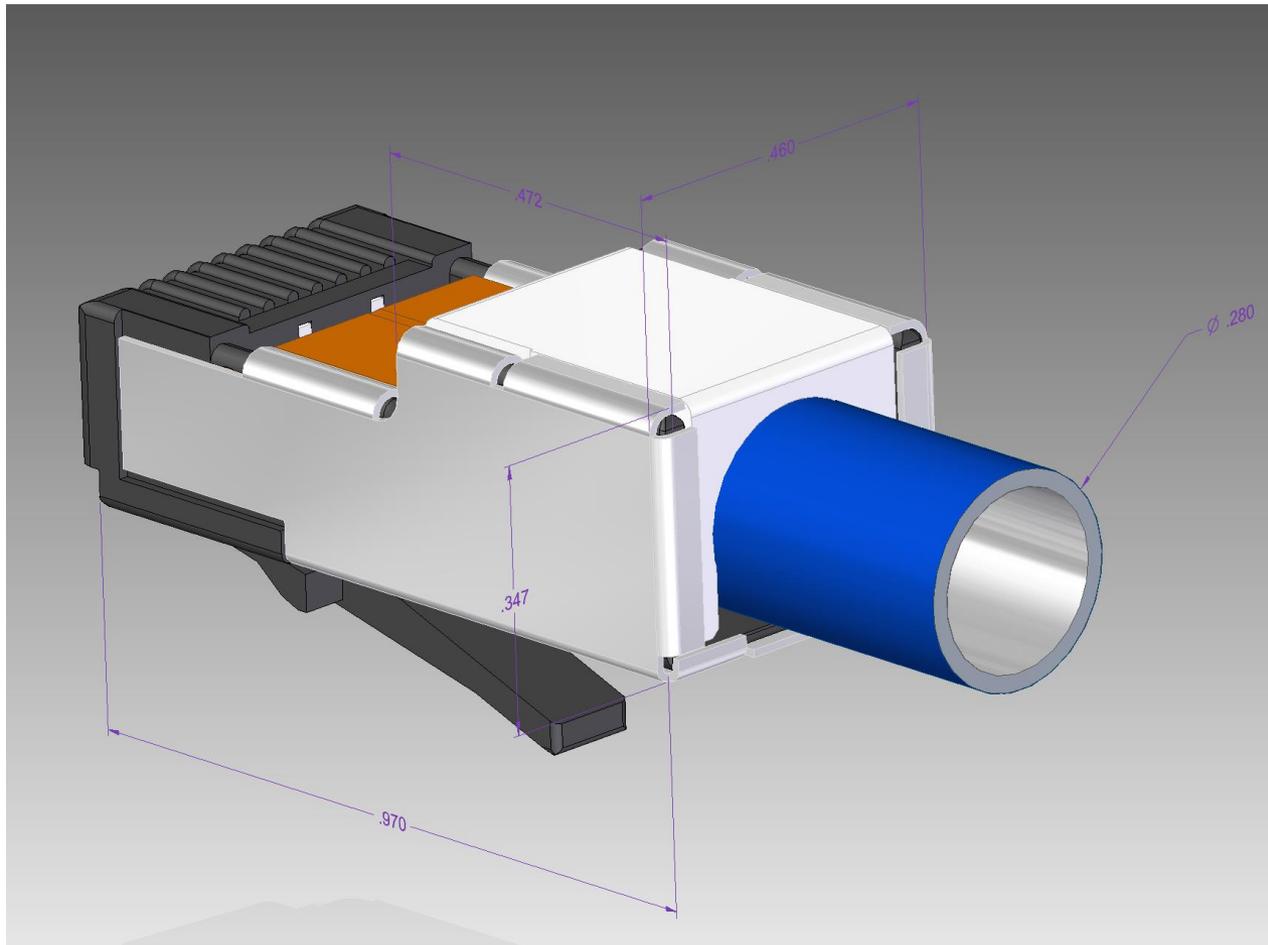
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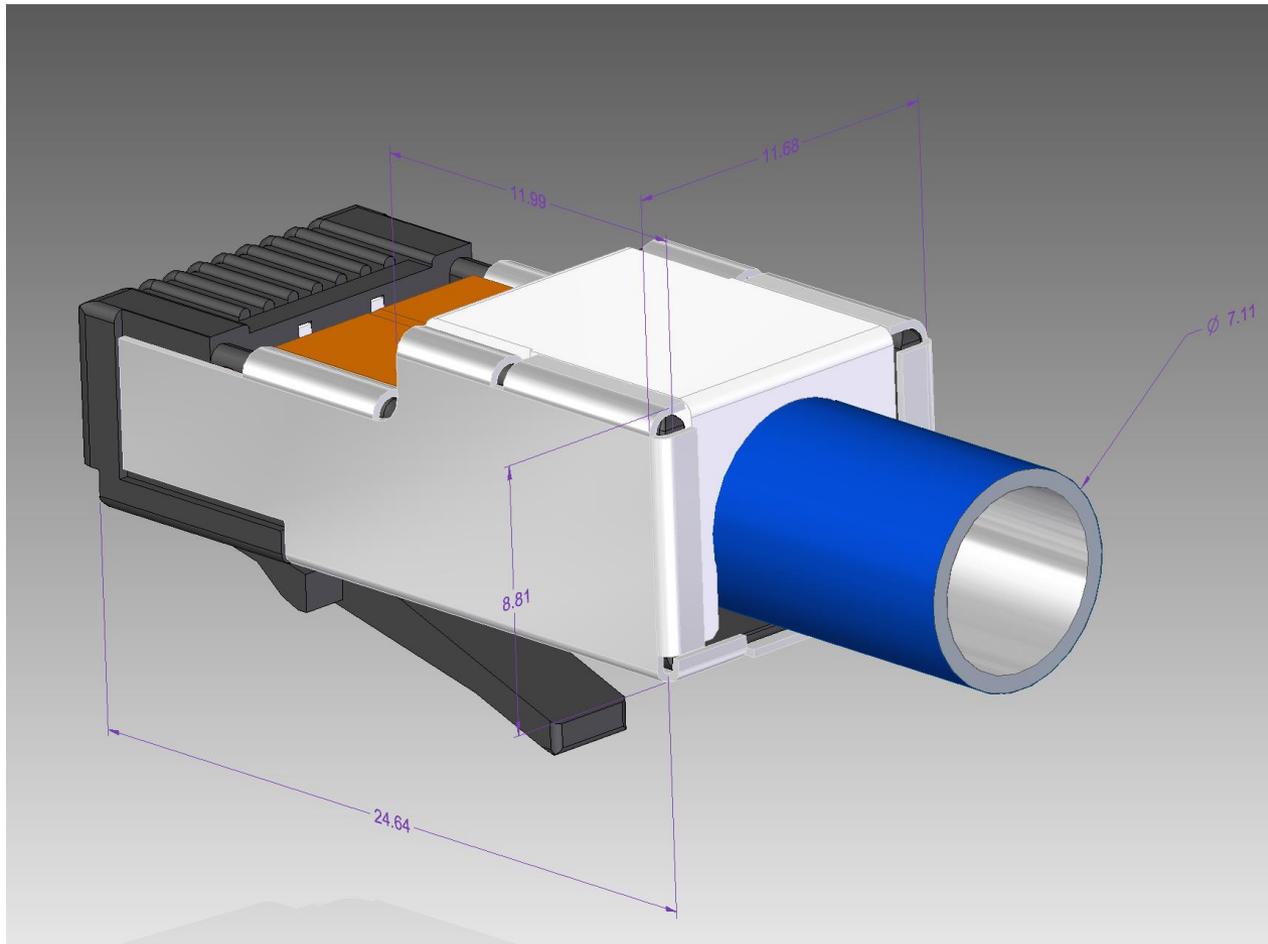
Single pair modular plug proposal.

- The 8 position modular plug mating configuration is well known and documented. It allows backward compatibility with commercial structured cabling.
- The 8 position modular plug design is well suited to handle the size of an 18 AWG single pair shielded cable. Using a lower pin-count modular connector, such as a 6 position or 4 position connector does not improve the density because the cable itself is large. Cable strain relief is important for reliability and a professional appearance.
- For smaller AWG wires, up to four pairs can be accommodated within one plug, allowing sheath sharing with the single pair application.
- Mating connectors are readily available and connector performance, primarily return loss for single pair, and alien crosstalk for sheath sharing is well understood and controlled.
- Modular plugs and jacks have been found suitable for a wide frequency range and current carrying capacities.
- Pluggable, field terminateable.

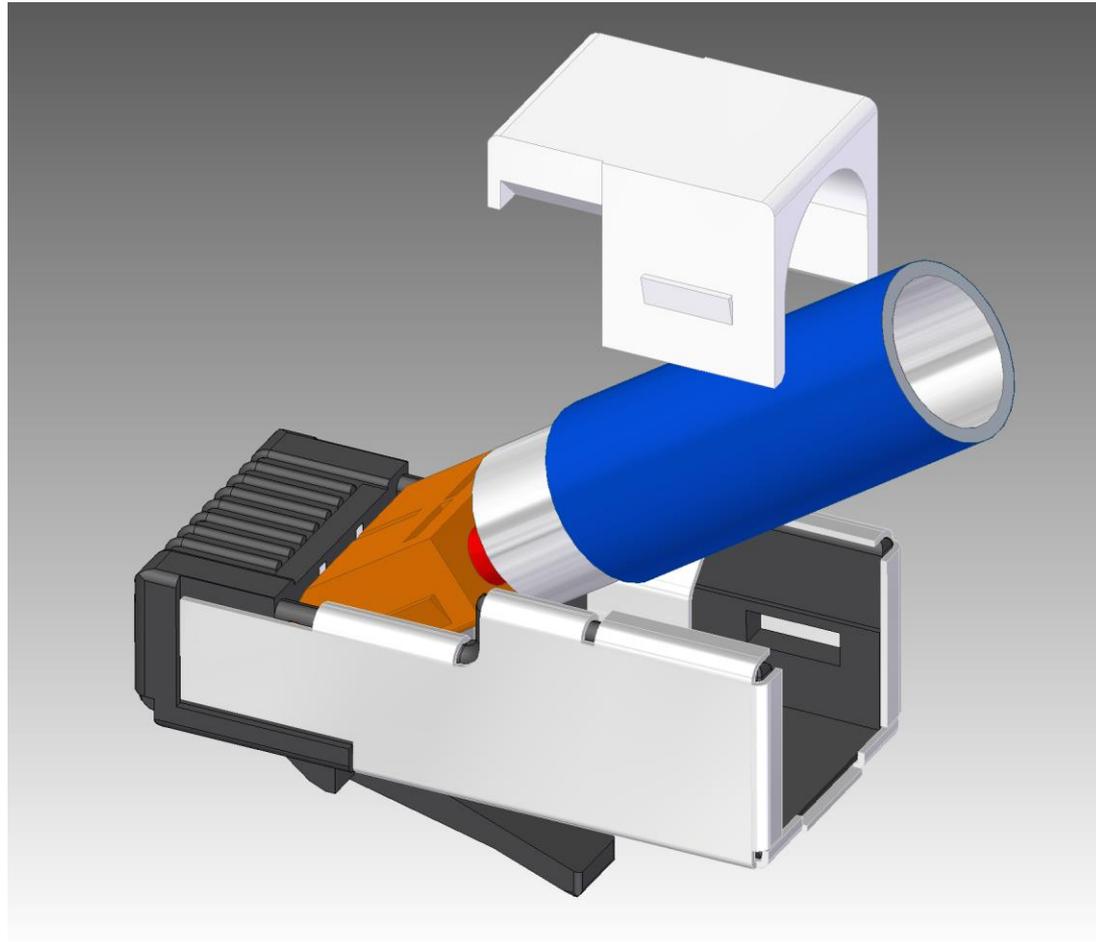
8 position single pair modular plug example, US inch dimensions



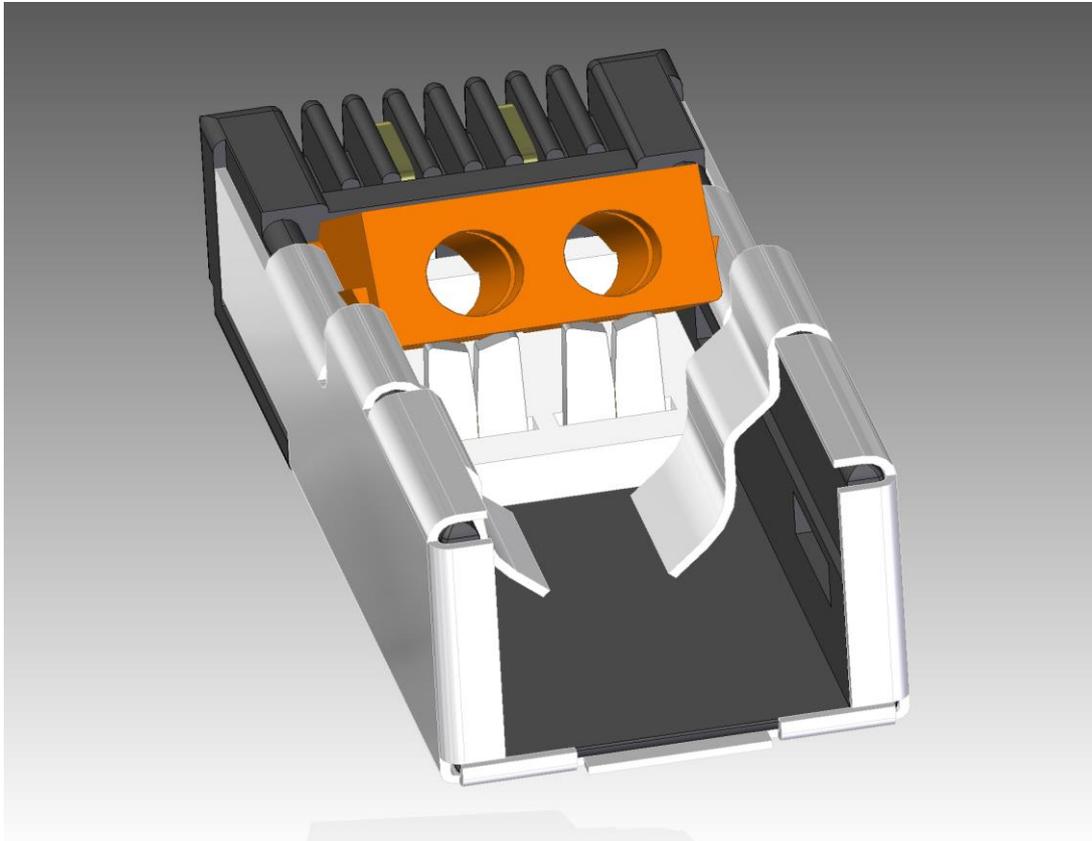
8 position single pair modular plug example, metric mm dimension



Inserting cable into the connector.



IDC Detail

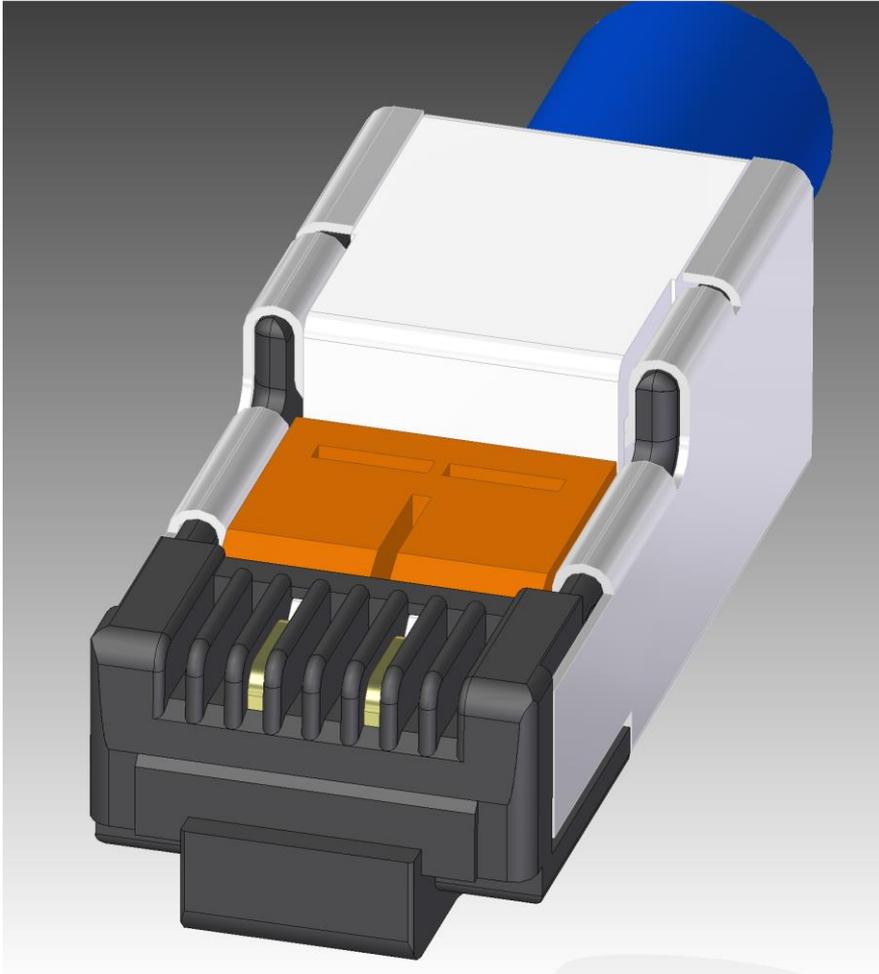


The large conductors take up most of the space within the plug

Plug shield contacts cable shield for short reliable connection.

A drain wire connection can be easily accommodated

Contact position detail



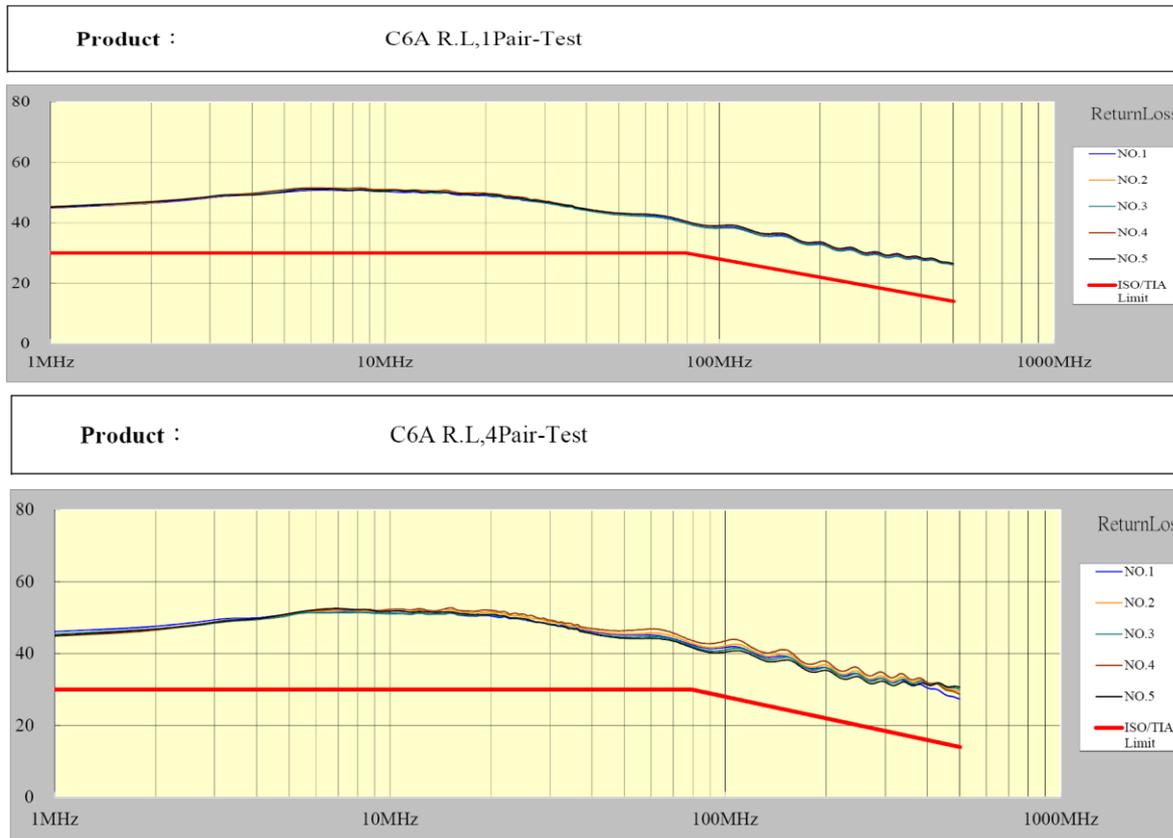
Use of the #3 and #6 contact positions allows for greater current carrying capacity.

The unused contact slots are blanked but left open to not interfere with contacts in an existing 8 position jack

Features and characteristics.

- The 8 position modular plug allows for compatibility with commercial structured cabling configurations.
- The 8 position modular plug envelope is well suited for large single pair shielded cables.
- Using the #3 and #6 contacts of the modular plug allows for good thermal dissipation around the contacts.
- The other pin/pair combinations, such as #4 and #5, #1 and #2 or #7 and #8 can be equally accommodated in single pair.
- The proposed IDC configuration is well understood and can reliably terminate wire gauges from #26 AWG stranded through #18 AWG solid or stranded.
- Larger wire gauges, such as #16 or #14 may be limited simply by the insulate conductor size. They are probably better handled with different connector designs.

Connector return loss measurements



Measurements of existing four pair connector return loss when mated with single pair and four pair modular plugs shows similar performance and margin to existing connector requirements.