

When using cable and panel connectors a common problem that customers encounter when faced with multiple contact termination types is understanding which method best fits their application and needs.

Most connector series have multiple contact termination options. This guide has been created to highlight the merits of each of the common types seen in the series of products that we represent. The ultimate goal being to assist you with making a more informed decision in the selection process.

The first thing to keep in mind is that all connector contact termination methods have exactly the same objective: to electrically and mechanically make a connection in a way that maintains the performance of the signal as if there isn't an extra connection point in the circuit. There will always be losses in performance, but the idea is to keep these to an absolute minimum. Let's take a look at the various methods aimed at achieving this objective.



Solder

Electrically and mechanically robust, this method has been tried, tested and refined over many years. Solder connections are widely used throughout industry but due to the method being a skilled and labour-intensive process, it tends to favour low volume applications such as prototyping or on high density connectors where alternative termination methods are not possible.

Possible Advantages

- Mechanically sound
- Electrically efficient
- Gas tight joint avoids oxidisation of copper conductors



Crimp –Machined (Closed Barrel Contact)

Originally known as solderless terminals, crimp termination contacts were introduced in the 1950's. Being able to reliably and consistently achieve the same performance levels as solder, in the workshop or in the field, crimp technology quickly became the de facto standard for wire termination. Closed barrel crimp contacts are typically used in high specification designs where signal integrity is crucial.

Possible Advantages

- Gas tight joint
- Electrically comparable to solder
- Mechanically sound in tough conditions
- Can be terminated by hand tool or semi-automatic machine
- Little skill or training needed
- Suitable for field install & maintenance
- Consistent quality standards can be achieved

Crimp –Stamped & Formed (Open Barrel Contact)

As crimp technology developed, connector manufacturers looked for ways to reduce the cost of crimp contacts and manufacturing cable assemblies, especially for high volume industries such as automotive and white goods, and so the open barrel crimp contact was born. Stamped and formed contacts, as the name suggests, are contacts stamped from a flat sheet of material and then formed into shape. Reeled contacts are still attached to the original carrier strip used during the manufacturing process.



Possible Advantages

- Gas tight joint
- Electrically efficient
- Mechanically sound in tough conditions
- Can be terminated by hand tool, semi or fully automatic crimping machines
- Little skill or training needed
- Suitable for field install & maintenance
- Consistent quality especially when terminated by fully automatic machines
- Low installed cost due to high end cable assembly machine compatibility

Screw

The screw terminal is the oldest type of connection in the electronics industry. It is still widely used in the field because it provides a versatile, robust and safe electrical supply on-site. The screw terminal can be operated using a conventional screwdriver. The operating principle corresponds to that of the well-known terminal block. Some variants screw onto a compression plate to avoid unwanted damage to the wire inside.

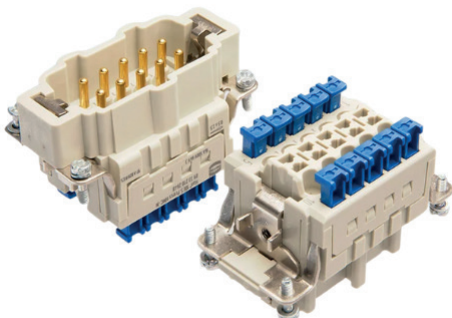


Possible Advantages

- No special tools required
- Suitable for field install & maintenance
- Easy to repair and correct wiring errors

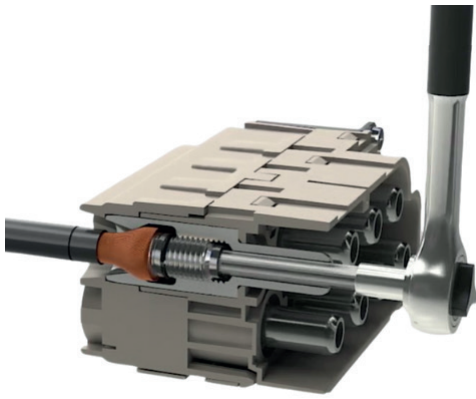
Clamp

Clamping mechanisms are recognised for their ease of use, as special tools are not required; stripped wires are simply pushed into a connector cavity and either trapped by a mechanism located inside, or locked in place using a simple screw driver.



Possible Advantages

- Simple to use
 - No special tools required
 - Rapid installation time
 - Easy to repair and correct wiring errors
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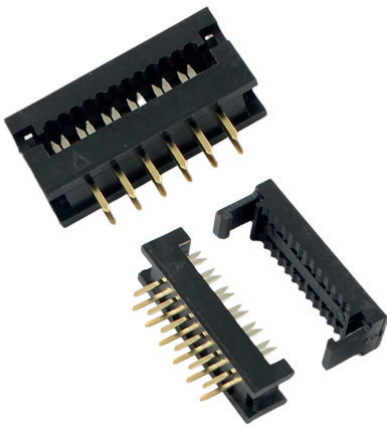


Axial Screw

Available from both HARTING and Weidmüller, this technology works by driving a conical shaped spike into the middle of the stranded wire and compressing the strands against a metal sleeve. It is a very effective way to terminate large flexible power cables that would normally have to be crimped using an expensive hydraulic press.

Possible Advantages

- No special tools required
- No crimping operation needed
- Can cater for large wire gauges



IDC

Insulation displacement contacts are best known for mass termination of ribbon cables typically found inside computer systems. The technique is also widely used for the termination of single wires. The principal advantage of IDC is that wires do not need to be stripped prior to termination.

Possible Advantages

- Requires minimal wire preparation
- Compatible with fully automated assembly
- Suitable for stranded and solid wire as well as ribbon cable
- Rapid termination



Dip-Solder

Through hole technology is the term used for a variety of similar soldering methods used to terminate the contacts within a connector directly to a printed circuit board (PCB). Solder binds the connector contacts to the exposed metallic areas of the board, creating a reliable mechanical and electrical connection.

Possible Advantages

- Well proven & reliable
- Avoids the need for extra connectors
- Excellent mechanical properties