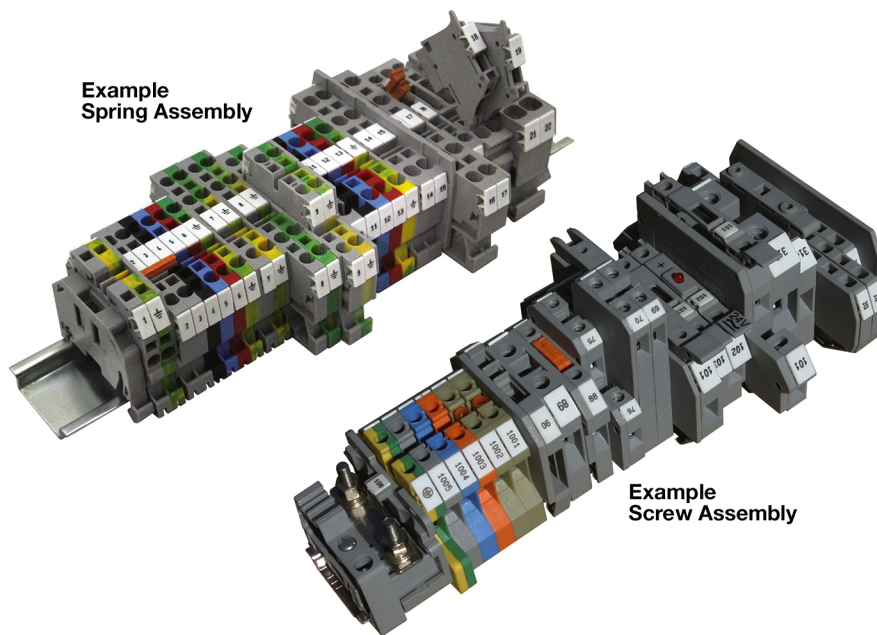


Altech Corporation

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The Difference Between Screw Clamp and Spring Clamp DIN Rail Terminal Blocks



Terminal blocks are a necessary part of almost every industry, supplying a way to hardwire components, subsystems, and systems together. As a staple of the electrical and electronics control systems used in a wide variety of applications, including utilities, automobile plants, chemical plants, and all types of automation and manufacturing that requires hardwired interconnection, the breadth of available products indicates how important application is to secure the right terminal block components. Most often, terminal blocks are found inside control panels to interconnect the panel wiring internally as well as to field wiring. Terminal blocks have a crucial role for providing good wire management in any project.

Because of trends in automation and manufacturing, the look and feel of terminal blocks has evolved and expanded into their own trends, including compact sizing, the use of a variety of materials for different environments, and the adjustment and expansion of clamp technology from those using screw clamps to spring clamps of various types. But whatever your application, you want to be sure to use the right product for the right job, whether the situation calls for DIN Rail mounted terminal blocks with front-entry wiring, side-entry wiring or top entry wiring, or panel mounted terminal blocks, there are products that provide the perfect solution for any challenge. Ultimately, your choice of terminal block must maintain a long life of reliable service,

provide as low maintenance as possible, and be able to be installed quickly and efficiently under any conditions.

This article will explore the more common options for your terminal block requirements, looking at the two most standard products, the screw clamp and the spring clamp terminal block.

Screw Type DIN Rail Terminal Blocks

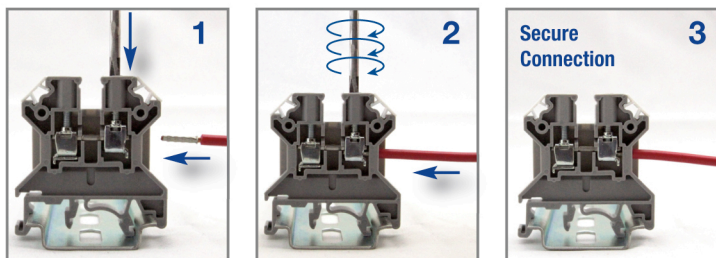


Screw terminals are used extensively in the distribution of electricity in homes, apartments, stores, as well as in utility plants and inside all types of controller and junction boxes for automation and manufacturing systems and in multiple industries.

Operation of this type of a screw terminal block is simple: you insert the wire into the open clamp, tighten the screw to a specified torque, remove your screwdriver and close the locking feature over the terminal for a reliable and safe connection.

One of the benefits of using a screw type terminal block is that they can be manufactured for very high voltage applications and offer the maximum in wire efficiency and reliability to the user. These terminal blocks are supplied with open clamps, ready to accept wires. No wire preparations are necessary because the terminal can be accessed easily whether you are using a ferrule or not.

Screw Clamp Instructions



- 1 Insert Wire into open clamp
- 2 Tighten screw to specified torque
- 3 Remove Screwdriver, screw terminal is closed with locking feature for a reliable/ safe connection

The terminal block must be able to handle the physical stress of multiple, large (sizes up to 250 kcmil) wires mounted in the same general location as well as handle the large currents going through the wires. This typically means that the terminal block must be sturdy and tough and made from high-impact materials such as polyamide PA66, self-extinguishing plastics whether

mounted on a DIN rail or on the side of a metal enclosure. Once completed, these terminal blocks provide vibration resistant, gas-tight connections designed for the most stringent requirements.

Most terminal blocks designed for industry are color coded so that the user can easily determine ground wires from hot wires and control wires. Other options are also available, such as push-in jumpers, partition plates for separation (used in wire management), and large center marking areas for important information.

Spring Clamp Terminal Blocks



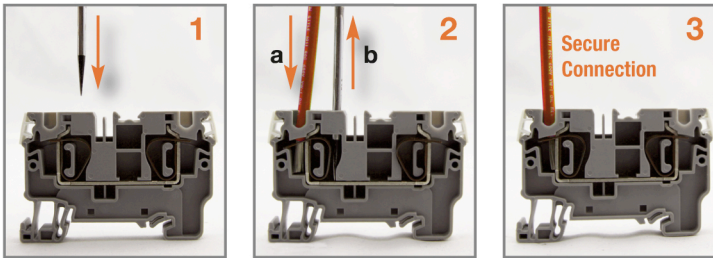
There are many benefits to using the latest spring clamp terminal blocks, the most important being the time it takes for installation. With the use of a tool or narrow screwdriver, push into an insertion space to open a pre-loaded stainless steel spring (see figure below). Your wire can then be inserted into an opening in the spring leg. By removing the tool, there is a spring force that presses the conductor against a copper tin plated current bar for a highly reliable connection. These terminal blocks are used with solid or stranded wire and create a very secure connection—unlike screws which can loosen over time or in high-vibration applications. Spring clamp terminal blocks are often designed into vehicles because of their natural resistance to vibration and shock. Under the high-vibration movement of vehicles and aircraft, the spring clamp terminal block maintains a secure hold on the wire long after when a screw type terminal block would have loosened and caused a potential failure.

Another type of spring clamp terminal block is designed specifically for single wire connections allows the wire to be pushed directly into the spring block without using a screwdriver or tool to complete the operation. Push-in spring clamp terminal blocks are being used in more and more applications as their benefits are realized.

With spring clamp terminal blocks in general, conductors can be terminated securely in mere seconds, independently of one another and with absolute reliability. This easy installation reduces wiring time by over 50 percent, while delivering a reliable, maintenance free connection independent of operator skill. Not only are these terminal blocks versatile, offering a reliable gas-tight connection but they are vibration proof, having no screw to loosen during operation.

Spring Clamp Terminal Blocks feature a Push-In Jumper system with various available pole configurations. They allow easy and reliable shorting connections, and tabs can be easily broken off for across terminal block shorting applications. Two Jumper Channels allow the user maximum flexibility.

Spring Clamp Instructions



- 1 Insert Flat-Head Screw Driver into insertion space to open pre-loaded spring
- 2 (a) Insert Wire into opening in spring leg.
(b) Remove screwdriver.
- 3 The spring force presses conductor against the current bar for a reliable/safe connection

These types of terminal blocks can also be used with all sizes of wire and are actually easier to use on small wires than a screw type block. They provide a fail proof and safe connection with no torque requirements. Like other terminal blocks, spring clamp devices accept wires with or without ferrules to provide a completely maintenance free operation.

This technology also allows DIN-rail-mount terminal blocks to be some of the industry's most compact to date. An added feature to DIN rail devices is that the ground connection has been added to the carrier rail, eliminating the need to provide additional wiring steps, reducing the many work steps involved to a minimum.

Terminal block design and manufacturing has come a long way in the past few years due to the advancements in materials and the needs of specific applications. Many manufacturers offer a full line of components that fit the broadest uses in the industry. Contacting and reviewing data sheets on these components will familiarize you with what is available and what will best suit the criteria of your particular application.