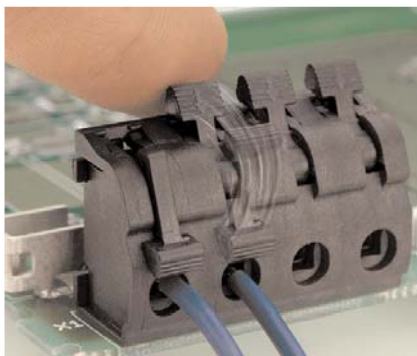


Spring Clamp Terminals..... Holding On Tight When It Really Matters

There are a lot of misunderstandings and confusion when it comes to the spring clamp terminals used on many of the PULS power supplies. The intent of this article is to calm some of those fears and educate as to why spring clamp terminals are a superior choice over screw terminals.

Screw Terminals

Many manufacturers of control devices including power supplies use screw terminals for many reasons. Screws terminals have traditionally been used and are widely accepted for years. They are also easy to procure and cost effective. However, due to many conditions that will be explained, screws have a tendency to loosen up. Maintenance is required to retighten the screws to avoid potential operational interruptions and/or damage to equipment, including the supply. Copper wire is a soft material and will continue to flatten ("flow") out over a period of time depending on



PULS Spring Clamp Terminals

the amount of current flowing through the wire. This event decreases the pressure from the screw terminal to the wire, causing loosening. Frequent temperature changes can also cause the screw terminals to flex, allowing the terminal to become loose. Even shock and vibration from normal operations often cause terminals to loosen. Every terminal has torque recommendations and these values are typically found in the installation manual of the product. However, some installers to save time and inconvenience, over-tighten the screw to meet the torque requirements. Although this may seem like a good idea, this extra pressure on the wire can cause damage possibly causing breakage which leads to down time or failure of the supply.

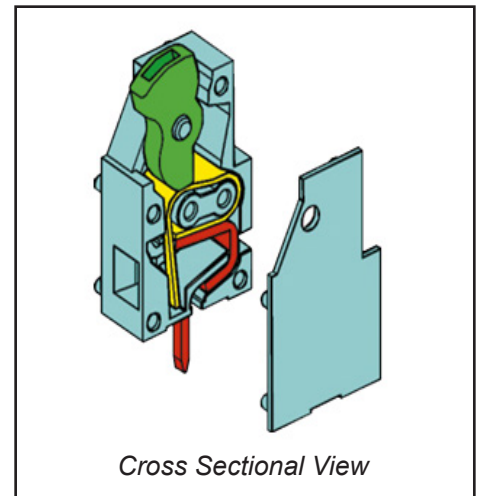
Basic Spring Clamps

There are many different types of spring clamps and some are more popular than others. Several spring clamps require a tool to hold open the spring before the wire can be inserted. Many times these terminals have a very small opening for the wire, making these types of terminals more difficult to wire. Also, if an operator is not familiar with how these terminals operate, it can be very frustrating to figure out how these types of connections function.

PULS Spring Clamps

The spring clamps on the PULS products are completely different than those of our competitors. The PULS spring clamps have a lever mechanism making it very easy to

open and close the terminal with no tools required. The spring clamps are shipped from the factory with the terminals in the open position so the supply is ready to wire right out of the box. The terminals are bistable, resulting in either the terminal being all the way open or all the way closed - there is no in between. When the clamp is closed, there is no guess work as to the torque that must be applied.



The spring automatically adjusts to the proper torque independent of the wire size. And speaking of wire size, the PULS Dimension Q-Series spring clamp terminals will accept a stranded or solid wire up to 10 AWG, substantially larger than most other clamp terminals. The opening of the terminals is large so it is easy to insert the wire. The spring clamps comply with the pull-out force requirements of the UL Standards and are approved for field wiring. A 10 AWG wire requires 80 Newtons of force which equates to approximately 18 pounds (weight)

of force. It is not a normal practice to change wire sizes in an application. With the PULS units, it is as simple as opening the lever, removing one wire size, inserting another and then closing the lever. The spring applies the proper pressure to the new wire size. It's that easy! The connection points are even gas-tight so there is no need to worry about the corrosion that sometimes develops between the wire and the terminal creating a poor connection. Many clamp terminals require ferrules on the end of the wires because the terminals are so small. With the PULS large spring clamp terminals, ferrules are allowed but not required.

Times Savings

Different well-known manufacturers have performed multiple studies as to the overall time savings of wiring with clamp terminals versus screw terminals. The results show a potential savings of over 50% over screws. And since the other type of clamp terminal requires a tool to open up the spring, PULS products potentially offer a higher savings since the terminals are

already opened from the factory and just need to be closed. It is easy to understand the difference if you think of how much time it takes to properly torque a screw terminal with a torque wrench rather than just tightening the screw head as tight as it goes. Since the spring clamps hold tight under all circumstances, no maintenance programs are required to check to see if the wires are tight. The power supply is the heart and soul of any control panel and is the last component that should suffer from wires falling out or from burnt terminals because the terminations came loose. The spring clamps ensure a perfect, tight connection every time - all the time!

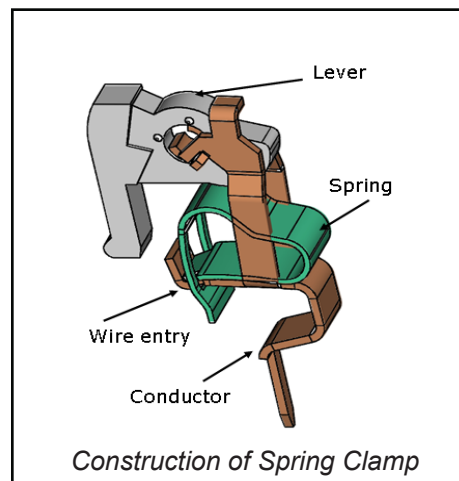
Key Features - Q-Series Spring Clamp Terminals

- Wire size up to 10 AWG - Solid or Stranded
- Bistable mechanism - Either opened or closed
- Gas-tight connections
- Terminals shipped in the open position
- Easy to use levers
- Meets UL pull-out force

- UL Approved for field wiring
- Maintenance-free

Overall Cost Savings

Advancements in technology can be scary at times because we have to change from what we are comfortable with. The Spring clamp terminals found on the PULS products are just one of many key features that makes using PULS product an easy choice. Spring clamps can not only save time and money during the installation process but also over the life of the product.



How to Use the PULS Spring Clamp Terminals



Terminal Shipped in the Open Position



Insert Wire



Close the Lever



The Wire is Held Tight