



SOLAR TRACKER WIRE MANAGEMENT GUIDE

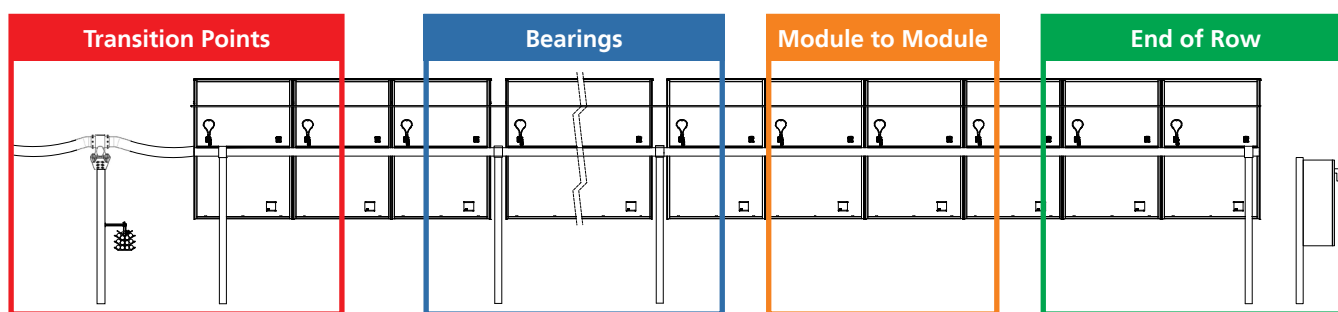
For Array Technologies Trackers
with First Solar Series 6 Modules

▶ **Intro**

While managing wire and cable for First Solar Series 6 modules is relatively straightforward, this wire management guide will help designers and installers avoid some common pitfalls of utility-scale wire management.

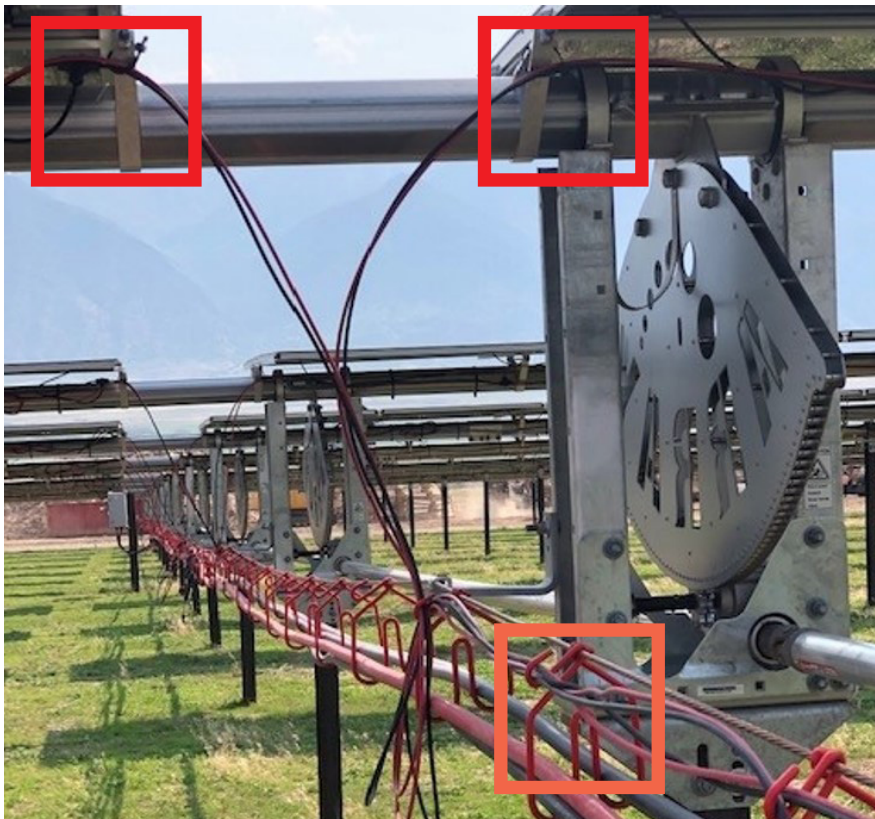
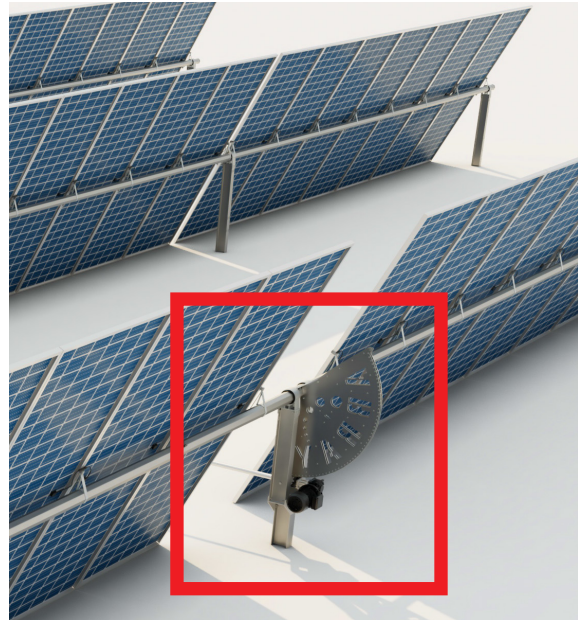
With First Solar Series 6 modules and an Array Technologies tracker system, module-level wiring, or string wiring, is typically attached to the module itself. With the Series 6 module, shorter leads and split junction boxes limit the need for those wires to be managed. Yet, Series 6 – with its additional wire harnesses – presents a challenge that does not exist with mono-crystalline modules.

This guide presents several guidelines and techniques. Also covered are tips and techniques to manage cables between in-line trackers and from trackers to fixed structures, such as posts. Not discussed is row-to-row cable management, as that is dependent on many factors (geology, climate, access considerations, owner preference, etc.) and not within the scope of this guide.



1 Transition Points

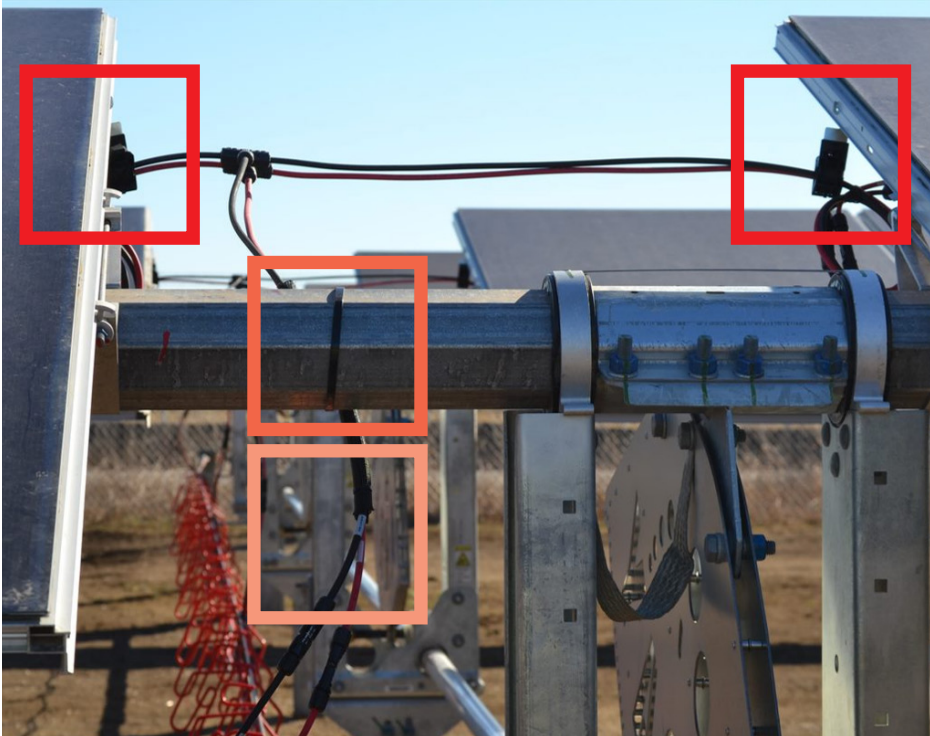
The Array Technologies drive train requires careful wire management planning in specific areas. The motor, gear and drivetrain provide many pinch points that must be avoided for the long-term health of the system. With the combination of First Solar’s Series 6 modules and the tracker, wire management holes on the module provide the perfect routing path for an assortment of HellermannTyton solutions. First Solar’s module holes keep wires far enough away from the drive train to avoid potential failure points. If the wires must run along the torque tube, choose mounting parts carefully. Using metal or coated metal clamps, strut straps and similar products can be dangerous in these areas, as tracker movement and wind can cause certain wire management devices to quickly abrade wire jackets. Use a product that will allow the wires to move and hang with sufficient slack and not damage the cabling.



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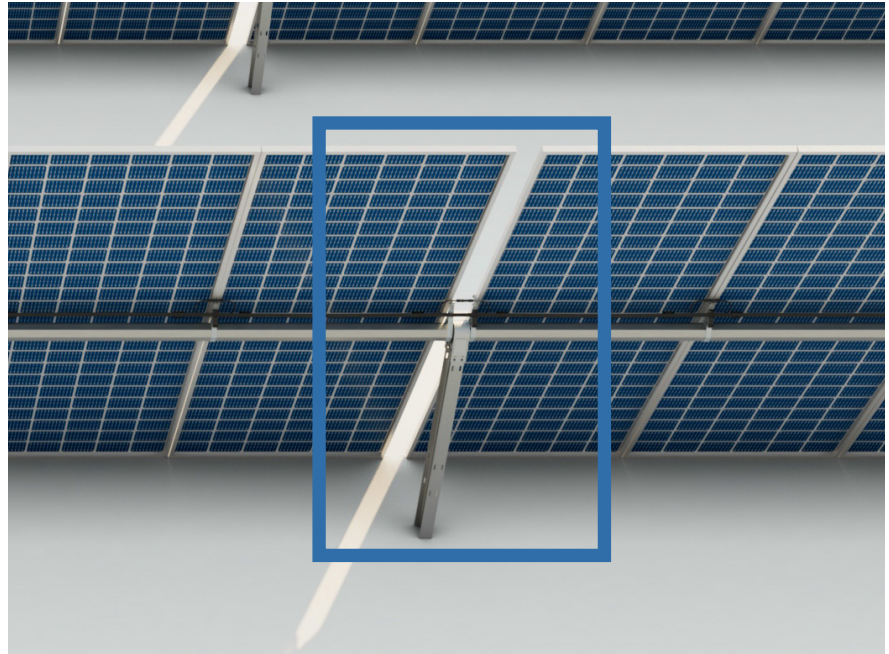


Any of these parts can be considered.



2 Bearings

For Series 6 modules routing home runs or module leads around the bearings, the bearing is less of a concern because most of the time you do not need to do any wire management along the torque tube. But if you do, bearings are hard to avoid. Leave enough wire available to allow for thermocycling, but not so much that it requires bundling the excess wire around these pinch points.





Special considerations must be taken in transitioning from the array to the above-ground wire management. As you are routing cable from the moving tracker to a stationary wire routing system, heavy duty arrest points are needed to prevent failure. Bearings, animals, wind and other elements can lead to numerous modes of failure.

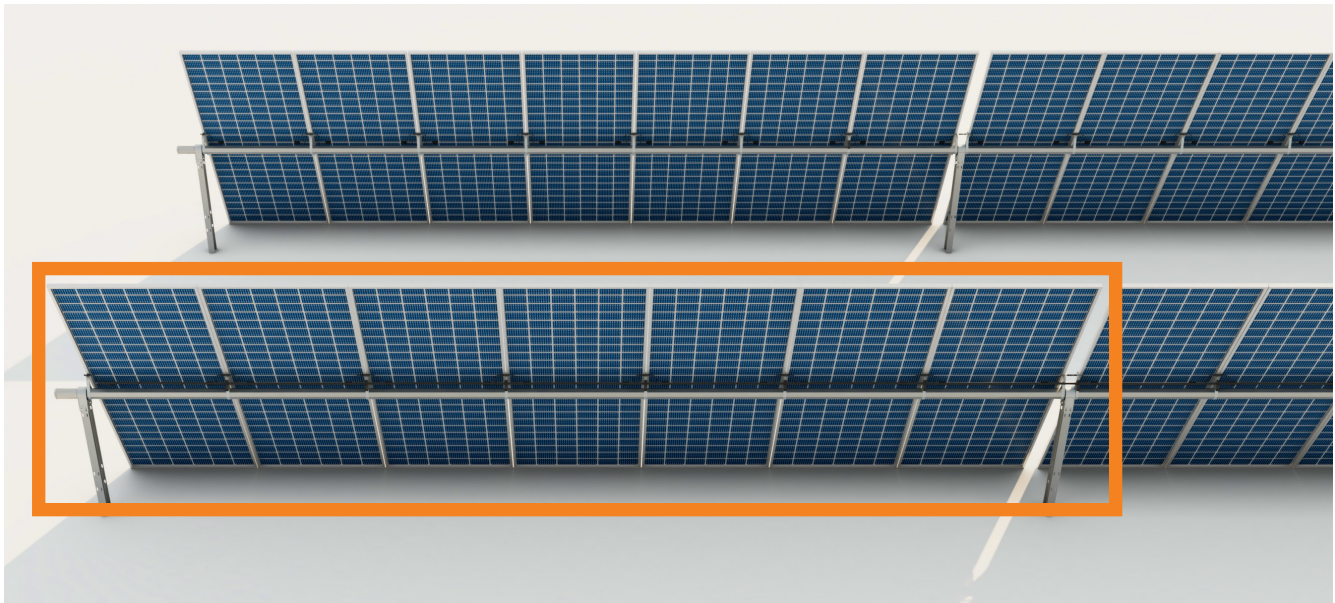


3 Module to Module

Single-axis trackers are engineered to minimize excess materials; therefore, there are few structural features to affix wire management parts. Attaching wire to the Series 6 module frame is the most efficient means of properly securing PV cable.

HellermannTyton offers parts designed specifically for the Series 6 module mounting hole. It is NOT acceptable to secure PV wires by running cable ties through the module mounting hole. This is one of the most common causes of premature failure on solar installations and an exacerbated problem on single-axis trackers, as the punched hole in a module frame can be sharp and will quickly sever a cable tie, regardless of material. The most vulnerable area for wire management failure occurs where the string bundle is heaviest, or a transition is made to a fixed point. This typically happens at the end of a tracker row or where a jump is made to an adjoining tracker, down to the torque tube, or where the bundle is transitioned to a fixed post.

A typical failure scenario seen on utility-scale installations is a “zipper” type failure. This occurs when the weakest point breaks and places even greater stress on the next support, causing it to break as well, and so on. Having an arrest mechanism minimizes this wire management failure point and subsequent catastrophic failure of an entire tracker’s module strings.

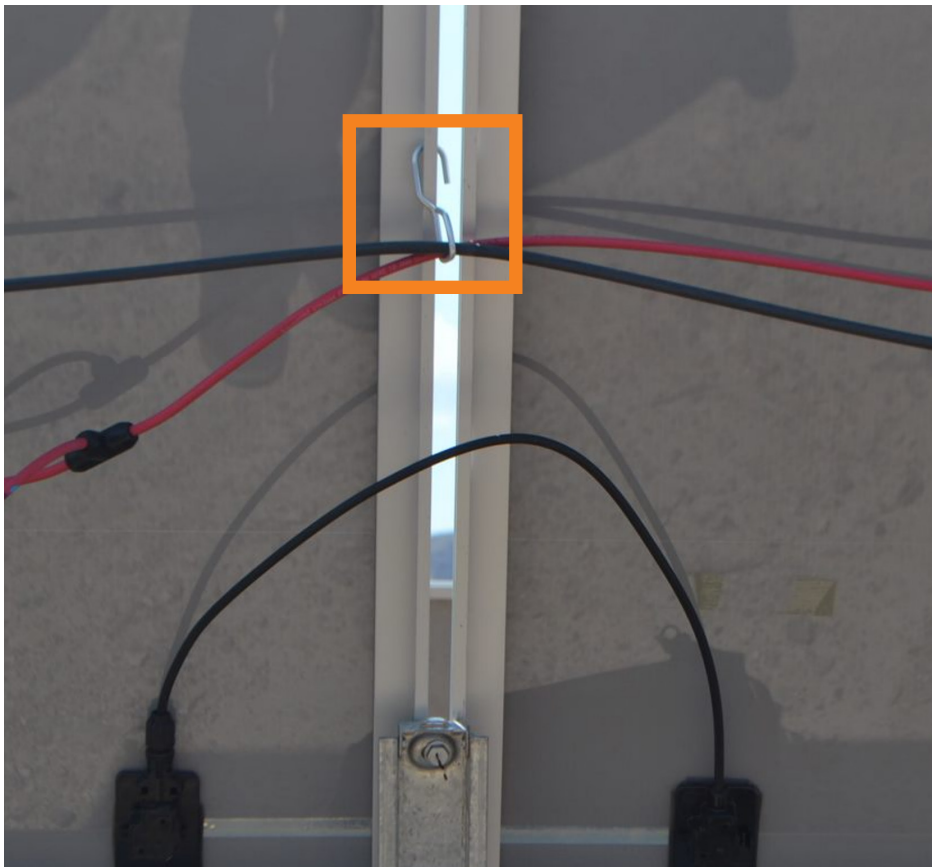




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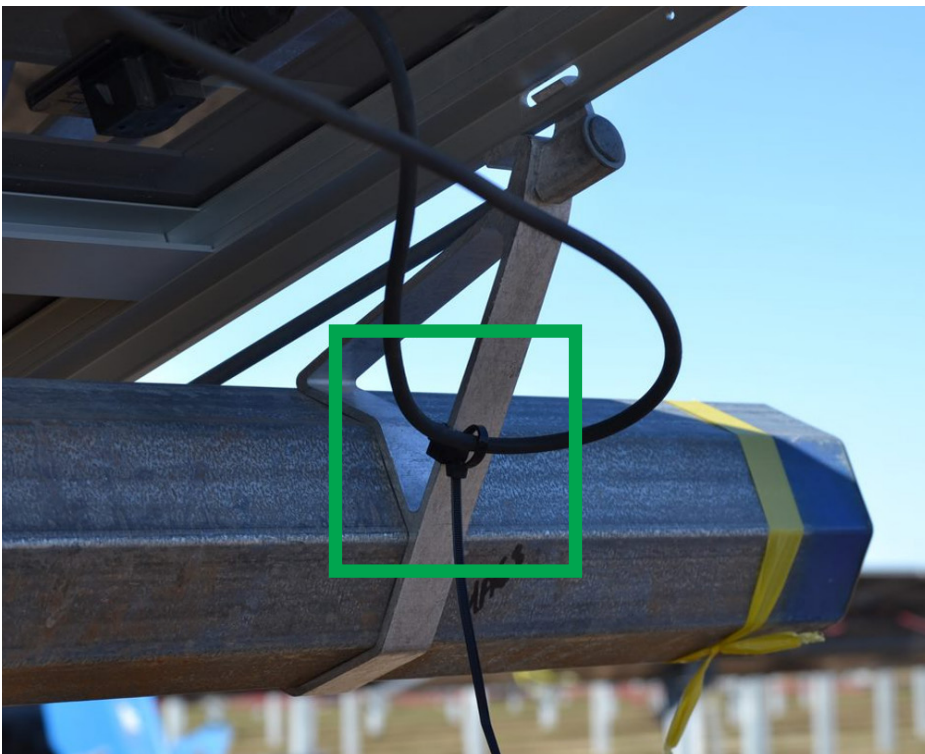
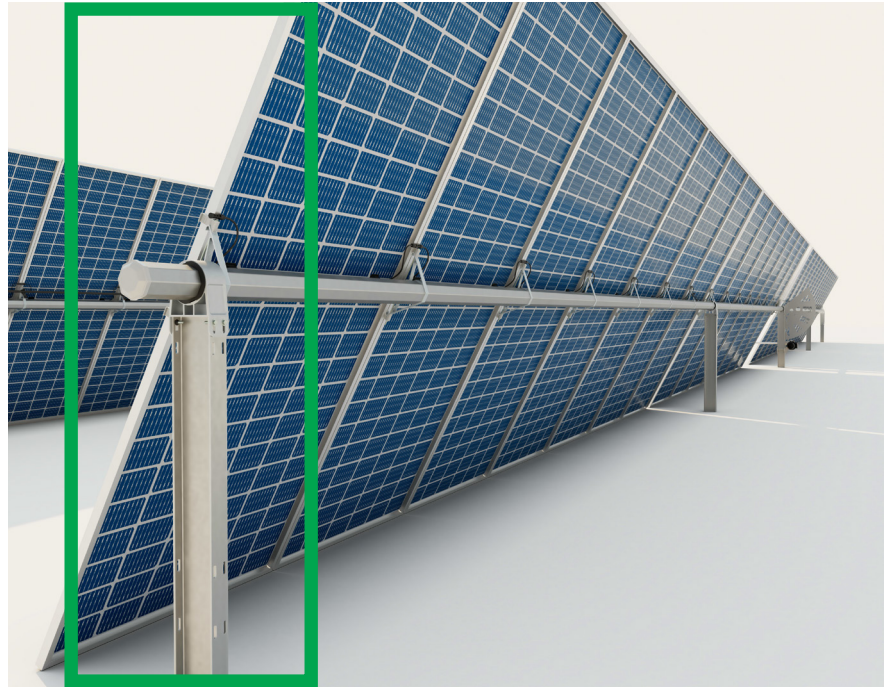
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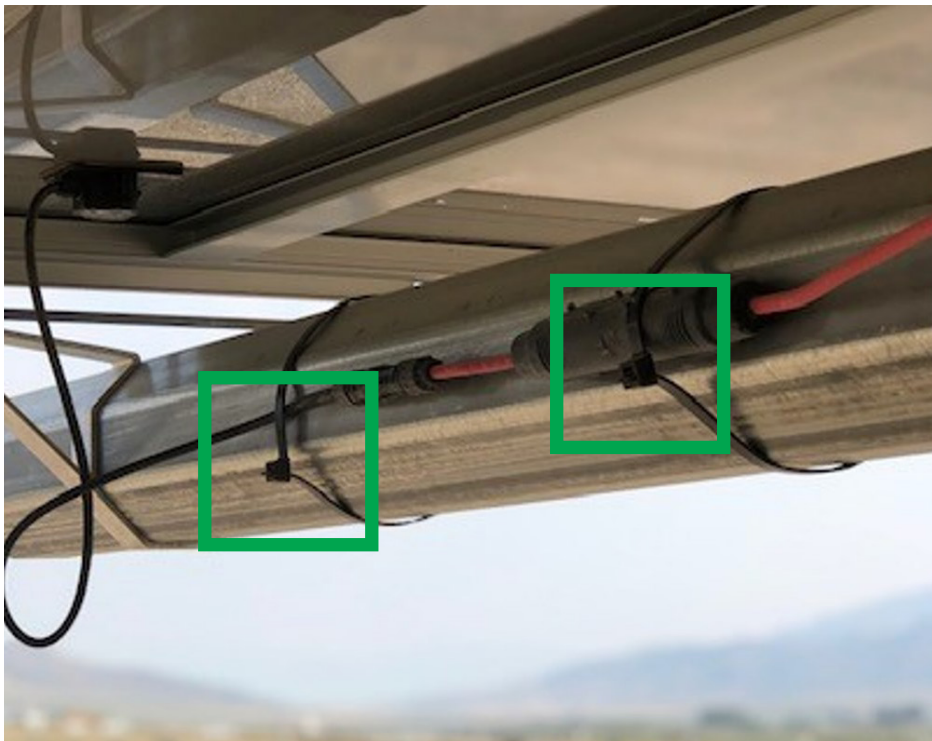


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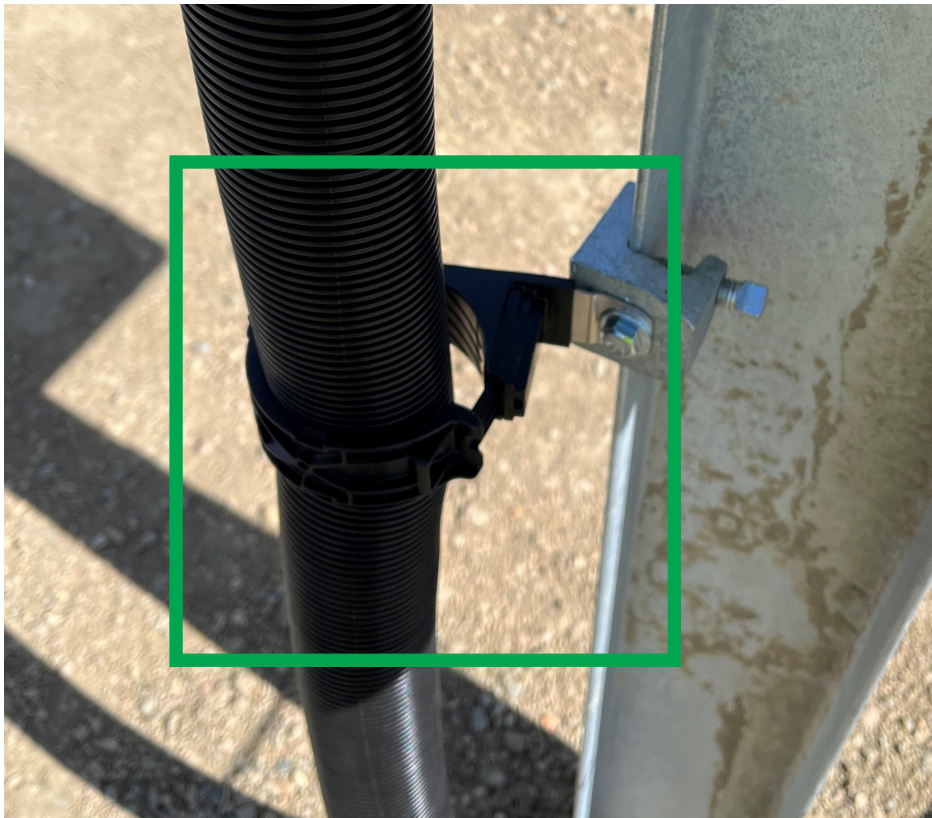
4 End of Row

An arrest mechanism should be securely fastened to each module adjacent to the gap or at the end of the row. This jump is often given extra UV and abrasion protection by using some type of split loom or “snake skin” covering. In this case, the arresting mechanism should securely hold both the wire bundle and the protective covering.





T150 or T250



151-01664



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About HellermannTyton

HellermannTyton is a global manufacturer of cable management and identification solutions for automotive, solar, electrical, construction, industrial automation, broadband and other OEM markets. The company's integrated approach to product design, sustainability, production, quality assurance and delivery is optimized to benefit local and global customers.

For more information, call HellermannTyton at 800.537.1512 or visit <http://www.hellermann.tyton.com>.

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