

ENHANCING SAFETY IN SOLAR POWER SYSTEMS WITH CHEKVOLT®: STREAMLINING DC LOTO PROCEDURES APPLICATION NOTE

As the renewable energy sector expands, industrial solar power systems are becoming a linchpin in the transition to a more sustainable future. However, these large-scale solar installations, which often involve voltage ranges of 600 to 1000 VDC, present unique challenges when it comes to maintenance and repair. Addressing these challenges head-on is the ChekVolt®, a Permanent Electrical Safety Device (PESD®), which significantly enhances safety during lockout/tagout (LOTO) procedures, thereby revolutionizing the maintenance of industrial solar power systems.

SOLAR APPLICATIONS FOR CHEKVOLT

In the industrial solar power sector, the ChekVolt® can certainly have a significant impact on safety and efficiency. As solar power becomes increasingly central to our energy mix, the importance of proper safety measures for installation and maintenance personnel also grows.

Solar power systems, particularly large-scale or industrial ones, use DC power in several key areas. The photovoltaic (PV) cells themselves generate DC electricity, and this is often combined in a DC combiner box before being converted to AC for transmission. Even once converted, there may still be high-voltage DC lines in use for power transmission, as DC is more efficient for long-distance, high-voltage transmission.



Here's how the ChekVolt can be beneficial in such DC applications:

- 1. Solar Panel Maintenance:** Solar panels produce DC electricity, which can often be in the range of 600-1000 VDC for industrial scale installations. During maintenance or repair procedures, the ChekVolt® could help ensure that the panels and associated equipment are properly de-energized, and can give a visual confirmation of this, improving safety.
- 2. Combiner Box and Inverter Maintenance:** Solar power systems often use DC combiner boxes to bring together the output from multiple solar panels. These combiner boxes and the subsequent inverters handle high-voltage DC electricity, creating another possible application for the ChekVolt® in ensuring safety during maintenance.
- 3. Transmission Line Maintenance:** Some solar farms are now utilizing DC transmission lines to transport power more efficiently. Once again, the ChekVolt® could be used here to ensure safety during maintenance or repair procedures.

In all these situations, the ChekVolt® can provide vital safety enhancements, speeding up LOTO procedures and providing reliable, visual verification of the absence of voltage. The device's IP69 rating ensures it can stand up to harsh environmental conditions that solar installations are often exposed to, making it a highly reliable tool for solar power maintenance tasks.



A CATALYST FOR EFFICIENT LOTO PROCEDURES

Safety is paramount in the high-voltage DC environments associated with solar power systems. ChekVolt®, with its 1000 VDC rating, facilitates a safer and more efficient way to perform LOTO procedures, which are essential when dealing with the high-voltage DC electricity generated by solar panels and combined in solar combiner boxes.

The ChekVolt® can be wired directly to either the line side or load side of the power circuit. As a result, it allows maintenance personnel to test for absence of voltage without exposing themselves to the internal components, thereby making the process safer and quicker. By reducing LOTO procedure times by 35-40 minutes, ChekVolt not only improves productivity but also significantly contributes to cost savings.

PRIORITIZING SAFETY WITH INNOVATIVE FEATURES

The ChekVolt® design it incorporates touch-safe, high impedance protected test points for safe absence of voltage testing. Additionally, the device features redundant LED voltage presence indicators, which flash when voltage is present in any phase, providing unmistakable visual verification of energy presence or absence.

ChekVolt® boasts an IP69 rating, indicating robust protection against dust and water intrusion. This resilience to harsh environmental conditions is crucial for solar power applications, which are often exposed to various weather elements. Therefore, whether it's during the maintenance of solar panels, combiner boxes, inverters, or high-voltage DC transmission lines, ChekVolt® ensures reliable safety, even in challenging weather conditions.

COMPACT DESIGN FOR VERSATILE APPLICATIONS

Despite its robust capabilities, the ChekVolt® is compact and straightforward to install. It's quickly mounted through a single 30mm knockout and comes with four lead wires potted in the construction. The device's compact nature makes it suitable for different solar power system configurations, regardless of space constraints or the complexity of the existing electrical setup.

CONCLUSION

As we harness the power of the sun on an increasingly industrial scale, the importance of safety in the maintenance of solar power systems grows ever more crucial. The ChekVolt® PESD is perfectly equipped to meet this challenge, offering a safer, smarter, and more efficient way to conduct maintenance on high voltage DC solar power systems. By streamlining LOTO procedures and enhancing safety, ChekVolt® is set to become a vital tool in the solar industry's mission to light up a sustainable future.