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Photovoltaic Rapid Shutdown Systems

National Electric Code requirements for Rapid Shutdown Systems

Jeffrey A. Fecteau / Senior Regulatory Engineer

The 2014 National Electrical Code (NEC) has a new requirement located in Section 690.12; Rapid Shutdown of Photovoltaic (PV) Systems on Buildings. This requires that PV system circuits installed on or in buildings must include a rapid shutdown function that controls specific conductors when PV system conductors of more than 5 feet in length are installed inside a building or extend more than 10 feet from a PV array. The controlled conductors must be limited to not more than 30 volts and 240 volt-amperes within 10 seconds of a rapid shutdown initiation (with voltage and power measured between any two conductors and between any

conductor and ground). Furthermore, this section requires the equipment that performs the rapid shutdown function to be listed and identified.

Certified (Listed) PV Rapid Shutdown Systems/ Equipment

PV rapid shutdown equipment that is Certified (Listed) by UL is covered under two different product categories; PV Rapid Shutdown System Equipment (QIJW) and PV Rapid Shutdown Systems (QIJS).

Photovoltaic Rapid Shutdown System Equipment (QIJW) covers pieces of

equipment intended for use in rapid shutdown systems and suitable for field installation in compliance with the NEC. This equipment provides specific functionality that allows it to be combined and/or interconnected with other rapid shutdown system equipment to develop a complete rapid shutdown system.

This equipment is intended to be installed as part of a PV system in conjunction with other equipment to perform functions related to rapid shutdown — including but not limited to combiners, disconnects, actuators, attenuators, indicators, and/or other system equipment. This equipment

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Photovoltaic Rapid Shutdown Systems (continued)

is intended to be installed and operated per the installation instructions and also to be used within its electrical and environmental ratings. The operability of complete rapid shutdown systems built from devices covered under this category has not been determined as part of the certification.

The Certification Mark for these products includes the UL symbol, the words “CERTIFIED” and “SAFETY,” the geographic identifier(s), and a UL file number. One of the following product identities appears on the system: High Reliability Photovoltaic Rapid Shutdown System Equipment or Photovoltaic Rapid Shutdown System Equipment. The word “Photovoltaic” is permitted to be abbreviated “PV.”

UL also Certifies (Lists) entire rapid PV shutdown systems under **Photovoltaic Rapid Shutdown Systems (QIJS)**. These rapid shutdown systems are intended to be installed as part of the PV array system. Systems certified under this category have been evaluated at the systems level for performance in PV Rapid Shutdown applications.

This equipment may also be investigated to functional safety standards for a higher level of fault tolerance as defined by the individual certification report; this equipment may be additionally marked “High Reliability Equipment.” Field installation or interconnection of multiple pieces of rapid shutdown system equipment or components designated as “High Reliability” does not result in a high-reliability system. Only systems rated and marked “High Reliability PV Rapid Shutdown System” have been investigated and found compliant with the increased reliability requirements as a complete system.

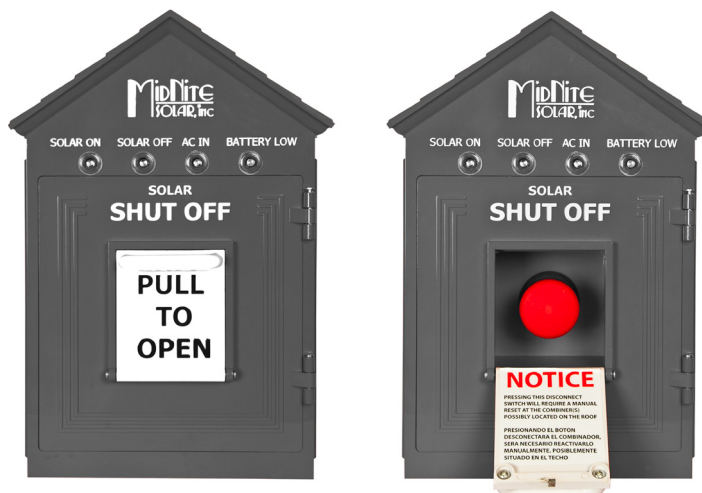


Photo courtesy of MidNite Solar Inc.

The Certification Mark for these products includes the UL symbol, the words “CERTIFIED” and “SAFETY,” the geographic identifier(s), and a file number. One of the following product identities appears on the system: High Reliability Photovoltaic Rapid Shutdown System or Photovoltaic Rapid Shutdown System. The word “Photovoltaic” is permitted to be abbreviated “PV.”

For multi-piece systems, the Certification Mark appears on the outside of each complete piece of equipment or subassembly constituting a complete rapid shutdown system eligible for certification. The Certification Mark covers only the equipment to which it is affixed; it does not cover other enclosure sections included in the assembly. Each piece of equipment is marked “Photovoltaic Rapid Shutdown System Subassembly” and is provided with a “____ of ____” marking, where the second blank indicates the total number of assemblies contained in the certified system and the first blank indicates the respective assembly number bearing the Certification Mark.

Summary

Even though products may be identified “High Reliability,” only systems that are rated and marked “High Reliability PV Rapid Shutdown System” have been investigated and found compliant with the increased reliability requirements as a complete system. Only PV Rapid Shutdown Systems or Equipment bearing the appropriate UL Mark and the company’s name, trade name, trademark or other authorized identification should be considered as being covered by UL’s Certification Service. The UL Mark provides evidence of listing, which is required by the 2014 NEC Section 690.12. Additional information can be viewed at www.ul.com/productspec by entering QIJS or QIJS at the category code search field. Once at the respective category page, there is a link to view manufacturers of these UL Certified (Listed) products.

For additional information on listed (PV Rapid Shutdown systems), please contact Jeff Fecteau at Jeffrey.Fecteau@ul.com or at +1.952.838.5453.