

RAPID SHUTDOWN

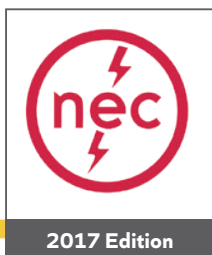
FACT SHEET



SUNSPEC RAPID SHUTDOWN CERTIFICATION PROGRAM

MEETING A MARKET MANDATE FOR SOLAR SAFETY

PV module-level power control and safety (“rapid shutdown”) is required in 24 states starting in January 2019



Requirement established by National Electrical Code (NEC) 2017.

Goal to protect firefighters and consumers who need to interact with a PV system.

NEC 2017 is an “inclusive” standard, meaning it applies to all manufacturers and equipment types covered by the standard.

The mandate affects millions of PV panels and all solar inverters.

SunSpec Alliance global leaders have developed an open standard rapid shutdown communication solution



29 companies worked together to create the solution, each of which contributed unique ideas and intellectual property.

The solution benefits all consumers by increasing safety of PV systems and vendors by establishing a Plug-and-Play standard for any solar panel and inverter combination.

Products complying to the standard are now available from world-class vendors.

SunSpec has launched a Rapid Shutdown Certification Program



Certification program communicates that system components work well with each other and have been tested to NEC 2017 requirements.

SunSpec Alliance offers Communication Signal for Rapid Shutdown certification for third party Independent Testing Laboratories, including Nationally Recognized Testing Laboratories.

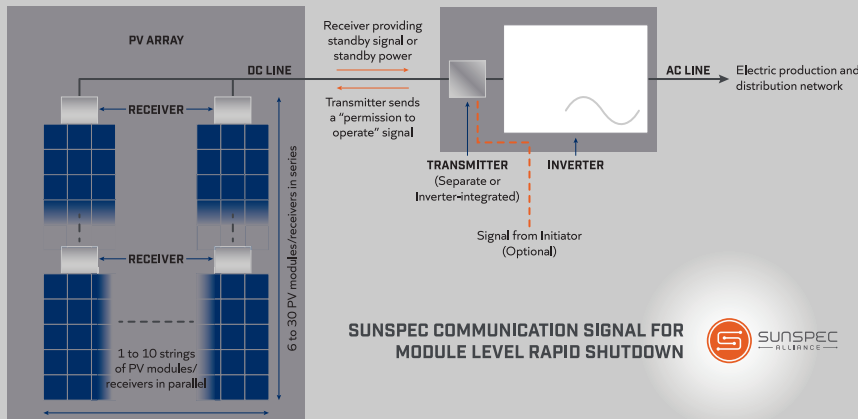
The first SunSpec Certified Test Labs were announced in October 2018. Find the full list at www.SunSpec.org/sunspec-certified-authorized-test-laboratories/.

Common term: Rapid Shutdown
NEC code term: PV Hazard Control

SunSpec Communication Signal for Module Level Rapid Shutdown

A multi-vendor, multi-device communication solution to enable NEC 2017

LOWERS COST, SAVES TIME, ENHANCES SYSTEM HEALTH



SunSpec RSD Specification Contributing Companies Early Adopters

- ABB
- Adesto Technologies
- Canadian Solar
- Celestica Inc.
- Chint Power Systems – North America
- Delta Products Corp.
- Enphase Energy
- ET Solar
- Fronius International
- Ginlong-Solis
- Hansol Technics Co., Ltd
- HiQ Solar
- Itek Energy
- ingetteam
- JA Solar
- LERRI Solar Technology Co.,Ltd
- Maxim Integrated
- Mersen Electrical Power
- Midnite Solar
- Neo Solar Power
- Omron Global
- OutBack Power
- Phoenix Contact
- SMA
- Samil Power
- Seraphim Solar USA Manufacturing Inc.
- Semitech Semiconductor
- Silfab Solar
- Solartec
- ST Micro
- Sungrow
- SunPower
- Sunrun
- Sunpreme
- Suntech Power
- Talesun
- Tesla
- Texas Instruments
- Tigo Energy
- UL LLC
- Yaskawa Solectria Solar
- Yingli Solar

Market Benefits of the Rapid Shutdown Specification and Certification Program

First Responder Safety

Provides simple, robust, and reliable solution to shut down the voltage at module level to 1V per module (NEC2017 requires < 80V).

Industry Benefits and Growth

Lowest cost solution to what is a fundamental market requirement.

Reduces installation and interconnection cost with Plug-and-Play system components.

Encourages job growth by supporting DER installation market.

Reports system health every time the sun comes up or the system is re-activated.

Consumer Benefits and Protection

Open standard protects consumers with competitive pricing, multi-vendor choices, differentiated options and value availability.

Ensures system service and upgrades with choice of vendors and interoperable components.



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