

Code Changes Quiz 1

Are you up to date on the latest NEC code changes?

Every three years the National Electrical Code, NFPA 70, is updated to help improve electrical safety.

You will see the following acronyms in this Quiz Note:

- NEC: National Electrical Code
- NFPA: National Fire Protection Association
- TVSS: Transient Voltage Surge Suppressor
- SPD: Surge Protective Device
- UL: Underwriters Laboratory
- UL 1449: Standard for Surge Protective Devices
- IEC: International Electrotechnical Commission
- SVR: Suppressed Voltage Rating
- PV: Photovoltaic
- UL 2579: Standard for Photovoltaic Fuses
- UL 508: Standard for Industrial Control Panels
- SCCR: Short Circuit Current Rating
- VPR: Voltage Protection Rating
- I_n : Nominal discharge current for an SPD
- MCOV: Maximum Continuous Operating Voltage

Question 1: The term "TVSS" was replaced by the term "SPD" throughout the 2011 NEC.

- A. True
- B. False

Explanation

- UL 1449 changed so much with Revision 3 that the overvoltage device names were changed to emphasize the significance. The former TVSS units were renamed SPDs.
- The changes to UL 1449 were so great that SPDs were not grandfathered into the 3rd edition. In order to get the holographic UL mark, SPDs must meet UL 1449 – 3rd edition.
- UL has also defined the test requirements and published the test data on the UL file card at UL.com, making it easier to compare like for like. Values such as VPR, I_n , and MCOV are on the file card for all UL Listed products.
- Because the changes were extensive, UL created a new guide or category code "VZCA" to replace "XUHT" for all SPDs.

- Such terms as TVSS, SVR, and Joule ratings are obsolete terms and make a specification obsolete. Mersen can help rewrite your spec using current terminology to get the highest level of protection

Question 2: What standards should fuses be listed to for use in PV applications?

- A. IEC 269
- B. UL 248
- C. UL 508
- D. UL 2579

Explanation

While UL 248 is the general fuse standard, it does not take into account the extreme temperature and cycling requirements of a PV system. UL 2579 has additional testing requirements. More and more inspectors are requiring fuses listed to this standard.

UL 2579 includes a Thermal Drift Test, a temperature extreme test, and a cycling test to better mimic the conditions the fuse will see in a PV environment

- For the thermal test, the fuse is subjected to 15 minutes of -40°C environment, followed by 15 minutes of 90°C Celsius ambient temps. After 50 cycles the fuses are required to pass all the tests again (except for the ambient temperature rise)
- For the temperature extreme test, the fuse must pass all the tests (except for the ambient temperature rise) in an ambient temperature environment of -40°C and 90°C.
- For the cycling test, the fuse is subject to 3000 cycles and again must pass all the tests (except for the ambient temperature rise)

With its compact size and bolt-on mounting feature, Mersen has designed a PV fuse in a Class J body, the HP6J series in 70 to 600A, at 600 VDC. Mersen has both 600VDC and 1000 VDC available from 1 to 30 in a midjet dimension (13/32" x 1½").

There has also been a new section created in UL 4248 (4248-18) for PV holders.

Mersen has expanded its holders as well. The standard USM1 holder is UL listed for up to 1000 VDC, and Mersen has a variety of fuseholders listed to the PV fuseholder standard with a wide variety of Class J blocks including stud mounting options.

(Continued on next page)

Code Changes Quiz 1 (continued)

Question 3: Short Circuit Current Ratings are...?

- A. Automatically 5kA
- B. Only required if the panel is UL508
- C. Unimportant Labeling
- D. All of the Above
- E. None of the Above

Explanation

The SCCR is based on the device. In a panel it will be based on the device with the lowest SCCR.

Both NEC 409 (Industrial panels) and NEC 670 (Industrial machinery) have added a SCCR requirement.

The SCCR must be greater than the available fault current where the device is installed. This can lead to installers having devices with too low of an SCCR for the location.

Short Circuit Current Ratings were added to NEC Section 110.10 Requirements for Electrical Installations. More and more parts are being labeled with Short circuit ratings. And more and more code sections are requiring that only devices with SCCR greater than the available fault current be installed.

Additional Resources

- Tech Topic—Standards & Codes, Note 4: Significant Changes to the NFPA 70E Standard 2012 Edition
- Tech Topic—Standards & Codes, Note 1: Achieve Higher SCCRs for Industrial Control Panels
- Tech Topic—Standards & Codes, Note 3: Understanding SPD Codes and Standards, TPMOV Technology
- Tech Topic—Component Protection, Note 4: Important Changes to UL 1449 Safety Standards for Surge Suppression
- PIQ Quiz—How much do you know about Arc Flash Hazards (features information about new requirements from the NFPA 70E Standard 2012 Edition)