ELECTRICAL WIRING COMPONENT APPLICATION PARTNERSHIP

1/24/2024

Subject: Change to SAE/USCAR-21, Rev 4 (Letter #9)

Changes have been made to the USCAR-21 specification today that adds detail to how to define when to use dry circuit resistance and/or voltage drop measurements. Please direct any comments or questions related to this update to EWCAP@uscar.org.

Situation:

Mid-sized wires (6mm^2 to 10mm^2) can be accurately measured for resistance using either Dry Circuit Resistance or Voltage Drop, but USCAR-21 restricts mid-sized wires to only voltage drop method. This limitation results in incompatibility with resistance measurements based on DIN EN 60512-2-1 and results in lab inefficiency.

Resolution:

Mid-sized wires (6mm^2 to 10mm^2) are now allowed to be measured with either resistance method. Here are the specific changes.

Change 4.1 as shown below.

SAE/USCAR-21 REVISION 4 Revised 2020-01
PERFORMANCE SPECIFICATION FOR CABLE-TO-TERMINAL ELECTRICAL CRIMPS - 7 -

4. TEST AND ACCEPTANCE REQUIREMENTS

4.1 General Testing Requirements

The test procedures in this section were written as stand-alone tests and may be used as such. However, they are normally used in a sequential test format and common sense is required to overcome any redundancies in sample preparation or in procedures. For example, if samples have already been prepared for the preceding test in a sequence, it should be obvious that the sample preparation step for that individual test (included so that test can be used as a stand-alone test) should be skipped. ~~(Note: The resistance measurement method for terminals crimped on >6 mm^2 wire has changed from using 4.5.3 Dry Circuit resistance to 4.5.6 Voltage Drop method to get better measurement accuracy.)~~

Allowed methods for measuring resistance depend on wire size and are shown in Table 4.1.

Table 4.1: Allowed methods for measuring resistance

Wire Size	Dry circuit resistance (4.5.3)	Voltage drop divided by current (4.5.6)
≤6 mm^2	Allowed	Not allowed
6 mm^2 to 10mm^2	Allowed	Allowed
>10mm^2	Not allowed	Allowed

Table is new. This is changed

Applicable sections that now reference table 4.1 to determine the applicable resistance measuring method(s) are: 4.5.2.4 – Steps 2, 3, 5, 7, TABLE 4.5.2.5A, *TABLE 4.5.2.5B, 4.5.6.1 and Note to 4.5.6.4.*

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