



SURFACE VEHICLE STANDARD

J3176™**SEP2025**Issued 2021-01
Reaffirmed 2025-09

Superseding J3176 JAN2021

Cable Marking for Circuit Identification in Multi-Voltage Power Distribution Systems

RATIONALE

This document was approved for creation by the SAE Truck and Bus Electrical Systems Committee to address the need for standardized use of cable color/markings to identify circuits in Multi-Voltage Power Distribution Systems.

SAE J3176 has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This SAE Standard establishes the minimum circuit identification and requirements for Multi-Voltage Power Distribution Systems (MVPDS) for use on trucks and buses. A Multi-Voltage Power Distribution System is one that distributes two or three voltages, up to 60 VDC, to power the controls, instruments, and devices.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE EA-1128 Wire Color Charts

SAE J1127 Low Voltage Battery Cable

SAE J1128 Low Voltage Primary Cable

R-257 Dictionary of Materials and Testing

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM G153 Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Non-Metallic Materials

ASTM G155 Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non Metallic Materials

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For more information on this standard, visit https://www.sae.org/standards/content/J3176_202509/

Documents

Standard, visit Sharing Hub

2.1.3 UL Publications

Available from UL, 333 Pfingsten Road, Northbrook, IL 60062-2096, Tel: 847-272-8800, www.ul.com.

UL 1581 UL Standard for Reference Standard for Electrical Wires, Cables, and Flexible Cords

UL 2556 UL Standard for Safety Wire and Cable Test Methods

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1654 High Voltage Primary Cable

SAE J1673 High Voltage Automotive Wiring Assembly Design

SAE J1678 Low Voltage Ultra Thin Wall Primary Cable

SAE J2840 High Voltage Shielded and Jacketed Cable

3. DEFINITIONS

3.1 CABLE FAMILY

A group with multiple conductor sizes having the same conductor strand coating, insulation formulation, and wall thickness type.

3.2 LOW VOLTAGE (LOW TENSION)

Usually considered to be ≤ 60 VDC (25 VAC).

3.3 MULTI-VOLTAGE POWER DISTRIBUTION SYSTEM (MVPDS)

Multi-Voltage Power Distribution System is one that distributes two or three voltages, up to 60 VDC, to power the controls, instruments, and devices.

3.4 NOMINAL

A suitable approximate value used to designate or identify a component.

3.5 SAE CONDUCTOR SIZE

A system that indicates the cross-section area of the conductor. The Metric SAE Conductor Size is the approximate area of the conductor.

4. GENERAL

4.1 SAE Primary Cable Types (SAE Conductor Size 8 and Smaller)

Cable shall comply with the cable types outlined in SAE J1128.