

IEEE Guide for Rail Potential Management for DC Electrification Systems

IEEE Vehicular Technology Society

Developed by the
Rail Transportation Standards Committee

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Developed by the

Rail Transportation Standards Committee
of the
IEEE Vehicular Technology Society

Approved 28 April 2021

IEEE SA Standards Board

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Abstract: This guide will provide a description of the concepts, applicable standards, and methods used for the calculation and management of rail potential on dc-electrified rail transit systems.

Keywords: accessible voltage, automatic grounding switch, IEEE 2720™, negative grounding device, negative return system, permissible touch voltage, rail potential, rail voltage rise, touch voltage, voltage limiting device

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Introduction

This introduction is not part of IEEE Std 2720-2021, IEEE Guide for Rail Potential Management for DC Electrification Systems.

At the time this standard was developed, there were no directly-applicable standards, codes or guide documents in the USA that addressed permissible rail-to-ground voltages (rail potential) or the management of rail potential on dc-electrified rail transit systems. This guide provides a description of the concepts, applicable standards, and methods used for the calculation and management of rail potential on dc-electrified rail transit systems.

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1. Overview

1.1 Scope

This guide provides a description of the concepts, applicable standards, and methods used for the calculation and management of rail potential on dc-electrified rail transit systems.

1.2 Purpose

This guide describes existing methods, terminology, and additional references for the management of rail potential on dc-electrified rail transit systems.

1.3 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (shall equals is required to).^{1,2}

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (should equals is recommended that).

The word *may* is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (can equals is able to).

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is

¹The use of the word *must* is deprecated and cannot be used when stating mandatory requirements, *must* is used only to describe unavoidable situations.

²The use of *will* is deprecated and cannot be used when stating mandatory requirements, *will* is only used in statements of fact.