ATIS-0600315.2022

Voltage Levels for DC-Powered Equipment Used in the Telecommunications Environment

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American National Standard for Telecommunications

Voltage Levels for DC-Powered Equipment Used in the Telecommunications Environment

Alliance for Telecommunications Industry Solutions

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Abstract

This standard establishes requirements and test procedures for voltage ranges and characteristics associated with the input voltage of telecommunications equipment powered from dc power systems in the telecommunications environment. It includes +12, + and -24, -48, + and -130, and 140 VDC.

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between providers, customers, and manufacturers. The Sustainability in Telecom: Energy and Protection (STEP) Committee – formerly the Network Interface, Power, and Protection Committee (NIPP) – engages industry expertise to develop standards and technical reports for telecommunications equipment and environments in the areas of energy efficiency, environmental impacts, power and protection. The work products of STEP enable vendors, operators and their customers to deploy and operate reliable, environmentally sustainable, energy efficient communications technologies. STEP is committed to proactive engagement with national, regional and international standards development organizations and forums that share its scope of work.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, STEP, 1200 G Street NW, Suite 500, Washington, DC 20005.

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American National Standard for Telecommunications –

Voltage Levels for DC-Powered Equipment Used in the Telecommunications Environment

1 Scope & Purpose

1.1 Scope

This standard establishes requirements and test procedures for certain voltage ranges and characteristics (i.e., transients and noise) associated with the input voltage of network telecommunications equipment powered from dc power systems in the telecommunications environment in carrier communications space. This standard also provides reporting criteria for results obtained during the testing of equipment.

This standard does not:

- Include test procedures for systems operating at other than nominal 48 Vdc in Sections 5.2.1, 5.4, 5.5, or 5.6.
- Specify dc power plant voltage levels.
- Specify the voltage applied to the interface between the network and customer installations (i.e., network span voltages or voltages at the customer interface).
- Apply to equipment intended to be powered from the telecommunications span.
- Apply to equipment intended to be solely powered by a pluggable power supply.

1.2 Purpose

The purpose of this standard is to specify:

- The steady-state dc input voltage ranges over which telecommunications load equipment (TLE) is required to operate when connected to the nominal voltage power plants addressed in this standard;
- Transient voltage tolerance requirements for TLE;
- Noise immunity for TLE;
- Limits for noise returned by the TLE;
- Voltage levels for uniform Mean-Time-Between-Failure (MTBF) calculations;
- Undervoltage requirements;
- Overvoltage requirements;
- Test procedures;
- Test report criteria;
- Personnel hazards; and
- Marking.

This standard is intended to be applied to equipment designed and manufactured after the effective issue date of this standard. Nothing in this standard should be interpreted to require the retrofitting of existing TLE or power plants. This standard does not restrict the development or use of telecommunications architectures that use other voltage levels and ranges.