ATIS-0600332.2020

Electrical Protection of Network-Powered Broadband Facilities

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ATIS-0600332.2020, *Electrical Protection of Network-Powered Broadband Facilities*

Is an American National Standard developed by the ATIS **Network Electrical Protection (NEP)** Subcommittee under the **ATIS Sustainability in Telecom: Energy and Protection Committee (STEP)**.

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American National Standard for Telecommunications

Electrical Protection of Network-Powered Broadband Facilities

Alliance for Telecommunications Industry Solutions

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American National Standards Institute, Inc.

Abstract

This standard provides the minimum electrical protection requirements intended to mitigate the disruptive and damaging effects of lightning and ac power faults to broadband facilities. Disturbances from lightning and ac power line faults may be disruptive to broadband service and may also result in damage to the broadband plant and equipment. Head ends, switching centers and similar type facilities, outside plant cables, and the interface point at customer locations are often exposed to such disturbances, either directly or through the broadband cables and ac power facilities that serve them. Telecommunications service providers employ electrical protection measures and bonding and ground techniques to reduce the effects of such disturbances.

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with the American National Standards Institute's (ANSI) 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 Telecommunication 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.

At the time it approved this document, STEP, which is responsible for the development of this Standard, had the following leadership:

E. Gallo, STEP Chair (Ericsson)

J. Fuller, STEP Vice-Chair (AT&T)

D. Ashton, STEP NEP Chair (CenturyLink)

The Network Electrical Protection (NEP) Subcommittee was responsible for the development of this document.

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1 Scope, Purpose, & Application

1.1 Application of Electrical Protection

The electrical protection, bonding, and grounding measures presented in this standard are intended to assist in protecting persons, equipment, and property from the effects of lightning, commercial ac power system faults, and electromagnetic interference (EMI) on the Network-powered broadband facilities.

1.2 Facilities Covered

This standard applies to the electrical protection, bonding, and grounding of network-powered broadband facilities at the headend, in the outside plant, and at the customer location (including the entrance or interface point). In some cases, the headend and the switching center might be collocated. These facilities may consist of paired conductor cable, optical fiber cable, or coaxial cable, either singularly or in any combination. The facilities may be aerial, buried, or underground.

The typical basic system configuration includes a cable supplying power and network-powered broadband signal to a network interface unit (NIU) that converts the network-powered broadband signal to the component signals. Typical cables are coaxial cable with both network-powered broadband signal and power on the center conductor, composite metallic cable with a coaxial member for the network-powered broadband signal and twisted pair(s) for power, and composite optical fiber cable with twisted pair(s) for power. Article 830 of National Electric Code® (NEC®) covers network-powered broadband communications systems at customer's structures or buildings, extending from the power-passing tap to the NIU.

1.3 Items Not Covered

Although a variety of existing and proposed network-powered broadband architectures are considered, the merits of the different technologies, and/or architecture types, are not covered.

The following items are also not covered by the standard:

- In-Premises wiring and components.
- Other customer premises equipment (CPE) from the network interface inward.
- Span-Powering Power-over-Ethernet (PoE) and G.fast network applications – ATIS is currently developing standards covering the powering limits and electrical protection aspects of these architectures and applications.
- Specific EMI mitigation designs.
- Specifications for primary protectors.
- Microwave systems.
- Subscriber radio systems.
- Communications circuits as covered by National Electric Code® (NEC®) Article 800. Other ATIS standards such as ATIS-0600313 [Ref 4], ATIS-0600316 [Ref 5], and ATIS-0600318 cover these communications circuits.
- CATV as covered by NEC® Article 820.