



ATIS-0600012

ATIS Standard on -

**Electrical Protection Considerations for  
Broadband Systems**



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# Electrical Protection Considerations for Broadband Systems

**Alliance for Telecommunications Industry Solutions**

Approved November 27, 2017

## **Abstract**

Broadband equipment is susceptible to disturbances that require the use of electrical primary protection devices. These primary protectors could have a negative impact on the signal of interest during steady-state conditions as well as during protector switching or clamping operation. The characteristics of these electrical primary protectors and their impact on broadband signals are considered herein. This is the Foreword document in a suite of ATIS Standards intended to provide requirements and guidance for the use of electrical primary protectors in various technology architectures.

## Foreword

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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.

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. The word *may* denotes a optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

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 of consensus on this document, STEP, which was responsible for its development, had the following leadership:

E. Gallo, STEP Chair and STEP NEP Vice Chair (Ericsson)

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

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

## Table of Contents

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<b>1</b>	<b>Scope, Purpose, &amp; Application.....</b>	<b>1</b>
1.1	Scope.....	1
1.1.1	<i>Broadband Electrical Protection Technical Reports</i> .....	1
1.1.2	<i>Equipment Covered</i> .....	1
<b>2</b>	<b>References .....</b>	<b>1</b>
2.1	Normative References .....	2
2.2	Informative References.....	2
<b>3</b>	<b>Definitions, Acronyms, &amp; Abbreviations .....</b>	<b>2</b>
3.1	Definitions .....	2
3.2	Acronyms & Abbreviations.....	3
<b>4</b>	<b>A Brief Description of Broadband Technologies .....</b>	<b>5</b>
<b>5</b>	<b>A Brief Description of Primary Protectors.....</b>	<b>6</b>
5.1	Bridging Effects.....	6
5.2	Series Effects.....	6
<b>6</b>	<b>Primary Protector and Exposure Fundamentals.....</b>	<b>7</b>
6.1	The Need for Primary Protectors .....	7
6.2	Exposure.....	8
6.2.1	<i>Lightning Disturbances</i> .....	9
6.2.2	<i>Ground Potential Rise (GPR) from Lightning</i> .....	9
6.2.3	<i>Contact with Power Conductors</i> .....	9
6.2.4	<i>Power Induction</i> .....	10
6.2.5	<i>GPR from Electric Power</i> .....	10
6.2.6	<i>Coaxial Resistive Coupling</i> .....	10
<b>7</b>	<b>Available Protection Technologies .....</b>	<b>10</b>
7.1	Carbon Air Gap Protectors .....	11
7.2	Gas Tube Protectors.....	12
7.3	Solid State Protectors .....	12
7.3.1	<i>Metal Oxide Varistor (MOV) and Avalanche Breakdown Diode (ABD) or Silicon Avalanche Diode (SAD)</i> 12	
7.3.2	<i>Thyristors</i> .....	12
7.4	Gas Tube + MOV: Backup or Hybrid Configuration.....	12
7.4.1	<i>Gas Tube + MOV: Backup</i> .....	12
7.4.2	<i>Gas Tube + MOV: Hybrid</i> .....	13
<b>8</b>	<b>Service to Cell Towers .....</b>	<b>14</b>
<b>A</b>	<b>Susceptibility of Broadband Architectures to Voltage Surges .....</b>	<b>15</b>
<b>B</b>	<b>Recommended Reading .....</b>	<b>16</b>

## Table of Figures

---

Figure 6.1:	Cloud-to-Ground Lightning Incidences in the US.....	9
Figure 7.1:	Impulse Breakdown Voltage .....	11
Figure 7.2:	Breakdown Voltage Distribution Comparison .....	11

Figure 7.3: Gas Tube + MOV “Backup” ..... 13  
Figure 7.4: Gas Tube + MOV “Hybrid” ..... 13

## **Table of Tables**

---

Table 5.1: Primary Protector Voltage and Current Protection Comparisons..... 7

# Electrical Protection Considerations for Broadband Systems

## 1 Scope, Purpose, & Application

### 1.1 Scope

#### 1.1.1 Broadband Electrical Protection Technical Reports

This ATIS Standard series provides requirements and guidance for the use of electrical protectors in various technology architectures. This document (ATIS-0600012) is the general foreword to subtending ATIS Standards that will follow. These documents include specific requirements and applications for broadband architectures, such as xDSL, Ethernet, Power Over Ethernet (PoE), G.fast, etc.

The purpose of this series of documents is to assist the service provider in choosing appropriate primary protection methods for the communications circuit. These documents describe the protector attributes that may impact broadband systems for outside plant, and inter-building applications and the services running over these links. These protectors are categorized by technology type and configurations. This series of documents describe protectors in their non-operating state and their effect on these services, consider the effects of protector response to a surge event, and how that operation may affect these services.

In addition, the associated subtending standards provide information and education with regard to secondary protection, design techniques, and appropriate tests for the equipment.

#### 1.1.2 Equipment Covered

This suite of ATIS Standards applies to the electrical protection of all broadband network equipment locations, examples include: broadband equipment at the headend, Central Office (CO) site, remote sites, and at the customer location -- including the entrance or interface point and Customer Premises Equipment (CPE). This equipment may interface with various types of cable media, such as coaxial cable or twisted pair that provides the broadband signal and any associated power.

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

The following are examples of equipment/items covered in this series of ATIS standards:

- Primary and secondary protectors.
- CO equipment.
- Remote equipment.
- Cell Site equipment.
- Network Interface Devices (NIDs), Intelligent Network Interface Devices (iNIDs), Network Interface Units (NIUs), Optical Network Terminals (ONTs), Building Entrance Terminals (BETs), and other points of demarcation.
- CPE such as Set-Top Box (STB), xDSL splitters, telephones, modems, etc.

## 2 References

The following standards contain provisions which, through reference in this text, constitute provisions of this ATIS Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this ATIS Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.