Australian Standard®

Telecommunication overvoltages

Part 1: Protection of persons

This Australian Standard was prepared by Committee TE/20, Telecommunications Overvoltage Protection. It was approved on behalf of the Council of Standards Australia on 17 October 1994 and published on 5 March 1995.

The following interests are represented on Committee TE/20:

AUSTEL
Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Australian Information Industry Association
Electricity Supply Association of Australia
Optus Communications
Telecom Australia

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PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee on Telecommunications Overvoltage Protection to provide information for the protection of users and equipment from overvoltage surges associated with telecommunication systems.

The objective of this Standard is to provide owners, installers and users of telecommunication equipment with information on—

(a) the basic principles involved in the protection of users of telecommunication facilities from the effects of nearby electrical disturbances such as lightning strikes; and

(b) how the effect of these electrical disturbances can be significantly reduced through the use of surge suppression devices;

in order to allow them to make their own decision regarding both the need for and the type of protection that should be fitted.

This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

The rapidly changing situation in the telecommunications area has produced a need for a range of documents that explains and describes practices that have not previously been publicly available. The continued trend towards using the latest technology has also brought with it the need to ensure the reliable operation of telecommunication equipment based on this technology. This problem is intended to be addressed in AS 4262.2 *Telecommunication overvoltages*, Part 2: *Protection of equipment*.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

CONTENTS

FOREWORD

This Standard sets out guidelines for the protection of users of telecommunication facilities from the effects of overvoltages.

It examines the significant factors requiring consideration due to lightning induced overvoltages. Sources of overvoltages, other than lightning, are power frequency disturbances caused by induction, direct contact and earth potential rise (EPR), electrostatic discharge (ESD) and abnormal test conditions. For information on sources of overvoltages, see Appendix A.

Whilst there are a number of possible sources of overvoltages, this Standard is primarily concerned with lightning initiated overvoltages as they represent the most common and severe source of overvoltage that the equipment user may be exposed to. Sources of overvoltage other than lightning are not expected to exceed the minimum required withstand voltage of telecommunication equipment.

Guidance is given for determining the need for personnel protection to be fitted in particular telecommunication installations based on the assessed risk.

The basic protection principles that need to be adhered to are discussed and a typical protective installation is explained.

Of particular concern is the occurrence of potential differences which may exist between conductive elements, such as metallic water services, power systems, telecommunication systems entering the building and local earth features. Methods of reducing these potential differences by a system of bonding of all affected conductors are outlined and the principles of bonding and typical installation techniques covered.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies the requirements for the protection of users of telecommunication equipment from overvoltages which may exist between a user environment and the telecommunication facilities in that environment.

This Standard does not apply to the carriers' networks.

NOTE: See the AUSTEL Technical Standards for the mandatory requirements for the connection of equipment to carriers' networks.

1.2 APPLICATION This Standard is intended for use by the owners, installers and users of telecommunication facilities.

The protection provided by compliance with this Standard is through the reduction of risk of injury from overvoltages. Although the probability and severity of injury may be reduced, the risk of such injuries occurring cannot be eliminated.

For information on lightning hazards and self-help protection, see Appendix B.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1768 Lightning protection

2420 Fire test methods for solid insulating materials and non-metallic enclosures used in electrical equipment

3000 Electrical installations—Buildings, structures and premises (known as the SAA Wiring Rules)

4117* Surge suppression devices for telecommunication applications

AS/NZS
3260 Approval and test specification—Safety of information technology equipment including electrical business equipment

AUSTEL
TS 001 Safety Requirements for Customer Equipment

TS 009 Installation Requirements for Customer Cabling (Wiring Rules)

OTHER
Telecommunications Act 1991 No. 98 of 1991

1.4 DEFINITIONS For the purpose of this Standard, the following definitions apply.

1.4.1 Bonding conductor—the conductor that connects the MDF/IDF or, in a non-MDF/IDF situation, the surge suppression device to the power earthing system.

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* First published as an Interim Standard.