Australian Standard®

Surge arresters

Part 2: Metal-oxide surge arresters without gaps for a.c. systems

This Australian Standard was prepared by Committee EL/7, Power Switchgear. It was approved on behalf of the Council of Standards Australia on 12 August 1996 and published on 5 December 1996.

The following interests are represented on Committee EL/7:

Australasia Railway Association

Australian-British Chamber of Commerce

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturers Association

Electricity Supply Association of Australia

Institution of Engineers, Australia

Testing interests

WorkCover Authority of N.S.W.

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PREFACE

This Standard was prepared by the Standards Australia Committee EL/7 on Power Switchgear to supersede AS 1307.2, *Surge arresters (diverters)*, Part 2: *Metal-oxide type for a.c. systems.*

This Standard is Part 2 of a series which when completed will consist of the following:

AS
1307 Surge arresters
Part 1: Silicon carbide type for a.c. systems
Part 2: Metal-oxide surge arresters without gaps for a.c. systems
Part 3: Distribution type metal-oxide surge arresters with gaps for a.c. systems
Part 4: Application guide

This Standard is based on and contains the full text of IEC 99-4, *Surge arresters*, Part 4: *Metal-oxide surge arresters without gaps for a.c. systems* and includes changes for Australian conditions. The IEC text being amended has been retained and is shown boxed. The changes and additions are indicated by a marginal bar.

The objective of this Standard is to adopt IEC 99-4 where possible, and add requirements for—

(a) tests for verification of spark production class;

(b) seal leak and seal ageing tests;

(c) polymer housing tests; and

(d) multiple lightning surge operating duty test.

This Standard presents the minimum criteria for the requirements and testing of gapless metal-oxide surge arresters that are applied to a.c. power systems.

Arresters covered by this Standard are commonly applied to live/front overhead installations in place of the non-linear resistor type gapped arresters covered in AS 1307.1. Protection of low-voltage circuits, below 1 kV, is under consideration.

An accelerated ageing procedure is incorporated in the Standard to simulate the long-term effects of voltage and temperature on the metal-oxide arrester. This is necessary since the metal-oxide resistors will have system power frequency voltage across them during the time the arrester is in service.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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SECTION 1 GENERAL

1.1 SCOPE This Standard applies to non-linear metal-oxide resistor type surge arresters without spark gaps designed to limit voltage surges on a.c. power circuits.

This standard basically applies to all metal-oxide surge arresters; however, polymeric housed, GIS, liquid immersed and other special designs may require special consideration in design, test and application.

This Standard basically applies to all metal-oxide surge arresters; however, polymeric housed arresters above 36 kV, GIS, liquid immersed and other special designs may require special consideration in design, test and application.

1.2 NORMATIVE REFERENCES The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60-1: 1989, *High-voltage test techniques. Part 1: General definitions and test requirements*.

IEC 71: *Insulation co-ordination*.

IEC 71-2: 1976, *Insulation co-ordination. Part 2: Application guide*.

IEC 99-1: 1991, *Surge arresters. Part 1: Non-linear resistor type gapped arresters for a.c. systems.*

IEC 99-3: 1990, *Surge arresters. Part 3: Artificial pollution testing of surge arresters.*

IEC 270: 1981, *Partial discharge measurements.*

IEC 815: 1986, *Guide for the selection of insulators in respect of polluted conditions*.

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AS

1018 Partial discharge measurements

1033 High voltage fuses (for rated voltages exceeding 1000 V)

1033.1 Part 1: Expulsion type