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**INSULATION COORDINATION  
(PHASE-TO-EARTH AND  
PHASE-TO-PHASE, ABOVE 1 kV)**

**Part 2—APPLICATION GUIDE**

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This Australian standard was prepared by Committee EL/7, Power Switchgear. It was approved on behalf of the Council of the Standards Association of Australia on 16 January 1985 and published on 10 May 1985.

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## PREFACE

This standard was prepared by the Association's Committee on Power Switchgear as a new edition of AS 1824, Part 2—1978.

It provides guidance in the application of AS 1824, Part 1.

This standard is based on IEC 71-2(1976) and IEC 71-3(1982)—Insulation Coordination, Part 2: Application Guide; and Part 3: Phase-to-phase insulation coordination, Principles, Rules and Application Guide. Acknowledgement is made of the assistance received from the above standards.

While this standard is technically similar to IEC 71-2 and IEC 71-3, it has been drafted so that it eliminates those portions of the IEC texts which it was felt did not contribute to the understanding or application of AS 1824, Part 1, or which would be more appropriately located in a textbook. Additionally, Appendix C of IEC 72-2 (Statistical Evaluation of the Protective Effect of Spark Gaps) is not included, as such an evaluation is not appropriate to a standard on insulation coordination.

Where this edition of this standard differs technically from AS 1824, Part 2—1978 and IEC 71-3 by amended or additional text, a rule is shown in the margin against the table, clause or part thereof affected and such deviations are summarized in the Annex.

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STANDARDS ASSOCIATION OF AUSTRALIA

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for  
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PART 2—APPLICATION GUIDE

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SECTION 1. SCOPE AND GENERAL

**This standard is intended to be read in conjunction with AS 1824, Part 1 (hereinafter referred to as Part 1).**

**1.1 SCOPE.** This standard provides some guidance on the selection of the electric strength of equipment, of surge diverters or protective gaps, and of the most suitable degree of switching overvoltage control.

NOTE: There is no Australian standard for the protective characteristics of protective gaps.

It is based on apparatus types and ratings in use at the present time. As new equipment and equipment characteristics are developed and proved, this standard should not be interpreted as limiting their adoption.

This standard covers both phase-to-earth and phase-to-phase insulation, and it deals separately with the following three voltage ranges of the highest voltage for equipment:

- (a) Range A: above 1 kV to less than 52 kV.
- (b) Range B: from 52 kV to less than 300 kV.
- (c) Range C: 300 kV and above.

It covers installations of all kinds and in all situations involving voltages higher than 1 kV, whether they are exposed to lightning or not, with the exception of overhead lines. However, the test procedures apply also to the latter.

**1.2 OBJECT.** The object of this standard is to provide guidance toward rational and economic solutions. It does not give strict rules for insulation coordination and design.

It is, therefore, the intention of this standard to consider only a few basic cases, it being evident that stations constituting exceptions to normal design, or included within systems having exceptional characteristics, will require special study by experienced engineers. For example, under certain circumstances, it may be necessary to separately specify phase-to-phase and phase-to-earth insulation levels.

**1.3 REFERENCED DOCUMENTS.** The following standards are referred to in this standard, several of which separately cover withstand and protective levels:

AS 1034 High-voltage Current-limiting Fuses

NOTE: AS 1034 lists the maximum overvoltages permitted during the interruption of fault current by a high-voltage fuse. This standard is shortly to be revised and will become a Part of AS 1033.

AS 1307 Surge Diverters—Non-linear Resistor Type

NOTE: AS 1307 gives the protective characteristics under lightning impulses of non-linear resistor type surge diverters. This standard is in course of revision and it is intended to issue it in two Parts covering silicon carbide type and metal-oxide type arresters.

The characteristics given in AS 1307 refer to surge diverters in normal use. However, surge diverters with better protective characteristics are available and their standardization is at present under consideration. AS 1307 gives guidance on the selection of surge diverters in an appendix.

AS 1824 Insulation Coordination

Part 1—Basic Principles, Standard Insulation Levels and Test Procedures

NOTE: AS 1824, Part 1, contains the series of standard values of the rated lightning and switching impulse withstand voltages as well as the tables of the recommended combinations between the highest voltage for equipment and those rated withstand voltages.

AS 1931 High Voltage Testing Techniques

Part 1—General Definitions, Test Requirements, Test Procedures and Measuring Devices

NOTE: AS 1931, Part 1 describes the methods for generation and measurement of test voltages and currents and the appropriate test procedures, and recommends methods for calibration and checking of measuring devices.

**1.4 DEFINITIONS.** For the purpose of this standard, the definitions given in Part 1 apply.