AS 2926—1987

Australian Standard®

Standard voltages—Alternating (50 Hz) and direct

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Australian-British Chamber of Commerce
Australian Electrical and Electronic Manufacturers Association
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PREFACE

This standard was prepared by the Association's Committee on Power Switchgear to supersede AS C1 — 1969, Standard Voltages and Frequency for A.C. Transmission and Distribution Systems.

It covers standard voltages for 50 Hz a.c. Australian electricity transmission distribution and utilization systems, standard voltages for a.c. and d.c. traction systems and nominal voltages for equipment less than 120 V a.c. or 750 V d.c.

This standard is based on IEC 38, IEC Standard Voltages, but Tables 2.1, 2.2, 2.3 and 2.4 herein contain only those voltages used in or recommended for Australian electricity supply systems.

In Table 2.1, IEC voltages 230/400 V and 277/480 V are not included.

In Table 2.2, for single-phase 50 Hz a.c. traction systems, no IEC voltages are included and for d.c. traction the highest voltage IEC system is not included.

In Table 2.3, the preferred IEC Series I voltages only are included up to 36/33 kV.

In Table 2.4, IEC voltages 170/150 kV and 420 kV are not included.

In Table 2.5, all the IEC voltages are included.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
STANDARD VOLTAGES—ALTERNATING (50 Hz) AND DIRECT

1 SCOPE AND DEFINITIONS.

1.1 Scope. This standard specifies standard voltages for the following applications:

(a) 50 Hz a.c. transmission, distribution and utilization systems and equipment for use in such systems having a nominal voltage above 100 V.
(b) Traction systems a.c. and d.c.
(c) Equipment having nominal voltages less than 120 V a.c. or 750 V d.c., the a.c. voltages being intended (but not exclusively) for 50 Hz; such equipment covers batteries (from primary or secondary cells), other power supply devices (a.c. or d.c.), electrical equipment (including industrial and communication), and appliances.

This standard does not apply to—

(i) signal voltages;
(ii) output voltages of transducers; and
(iii) standard voltages of components and parts used within electrical devices or items of equipment.

1.2 Referenced documents. The following standards are referred to in this standard:

AS 1824.1 Insulation Coordination (Phase-to-Earth and Phase-to-Phase, Above 1 kV)
Part 1—Basic Principles Standard Insulation Levels and Test Procedures

AS 2279 Disturbances in Mains Supply Networks
Part 3—Limitation of Voltage Fluctuations Caused by Household and Similar Electrical Appliances
Part 4—Limitation of Voltage Fluctuations Caused by Industrial Equipment

IEC 38 IEC Standard Voltages

1.3 Definitions. For the purpose of this standard, the following definitions apply:

1.3.1 *A.C. system*—system of alternating voltages having a frequency of 50 Hz.

NOTES:
1. Alternating voltages in this standard are stated in r.m.s. values.
2. The magnitude of variation of frequency is outside the scope of this standard and is a matter for regulatory authorities and other interested parties. As a general guide it can be taken that normal frequency variations of the order of ±0.25 Hz may be anticipated and that the differences between synchronous time and standard time will be, in general, within the limits of ±10 s.

1.3.2 *Nominal voltage*—voltage by which a system or equipment is designated and to which certain operating characteristics are referred.

NOTE: See Appendix A for notes on supply voltage levels and expected variations.

1.3.3 *Highest voltage of a system*—highest value of voltage which occurs under normal operating conditions at any time and at any point on the system.

NOTE: This excludes voltage transients such as those due to switching and temporary voltage variations. Typically, such variations would not be present for periods exceeding 10 s.

1.3.4 *Lowest voltage of a system*—lowest value of voltage which occurs under normal operating conditions at any time and at any point on the system.

NOTE: This excludes voltage transients such as those due to switching and temporary voltage variations. Typically, such variations would not be present for periods exceeding 10 s.

1.3.5 *Highest voltage for equipment*— highest voltage for which the equipment is designed, regarding especially its insulation. This voltage shall be at least equal to the highest voltage of the system for which the equipment is intended.

NOTES:
1. The highest voltage for equipment is indicated for nominal system voltages higher than 1000 V only. It is understood that, particularly for certain nominal system voltages, normal operation of equipment cannot be ensured up to this highest voltage for equipment, having regard to voltage sensitive characteristics such as losses of capacitors, magnetizing current of transformers, etc.

   In such cases, the relevant recommendations must specify the limit to which the normal operation of this equipment can be ensured .
2. It is understood that the equipment to be used in systems having nominal voltage not exceeding 1000 V should be specified with reference to the nominal system voltage only, both for operation and for insulation.

1.3.6 *Consumer's terminals*—junction of the Supply Authority's conductors with the consumer's mains.

2 STANDARD VOLTAGES.

2.1 A.C. systems having nominal voltages from 100 V to 1000 V. Standard voltages are specified in Table 2.1 for three-phase, four-wire or three-wire systems and single-phase three-wire systems including single-phase circuits (extensions and services) connected to these systems.

The lower values in each line in the second column of Table 2.1 are voltages to neutral and the higher values are voltages between phases. When one value only is indicated, it refers to three-wire systems and specifies the voltage between phases. For single-phase three-wire systems, the lower value in the second column is the voltage to neutral and the higher value is the voltage between lines.

The voltages in excess of 240/415 V are intended exclusively for heavy industrial applications and large commercial premises.