AS 2279.3—1991

Australian Standard®

Disturbances in mains supply networks

Part 3: Limitation of voltage fluctuations caused by household and similar electrical appliances

STANDARDS AUSTRALIA

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The following interests are represented on Committee EL/34:

Australian Electrical and Electronic Manufacturers Association
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Department of Defence
Electricity Supply Association of Australia
Institution of Engineers, Australia
Institution of Radio and Electronics Engineers, Australia
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PREFACE

This Standard was prepared by the Standards Australia Committee on Electric Waveform Distortion. It is one part of a Standard on disturbances in mains supply networks, the four parts being as follows:

Part 1—*Limitation of harmonics caused by household and similar electrical appliances*

Part 2—*Limitation of harmonics caused by industrial equipment*

Part 3—*Limitation of voltage fluctuations caused by household and similar electrical appliances*

Part 4—*Limitation of voltage fluctuations caused by industrial equipment*

This Standard should be read in conjunction with the Regulations, Service Rules and Installation Rules of the supply authority approving the connection.

Part 3 of this Standard, which specifies limits of voltage fluctuations that may be produced by an individual appliance when tested under specified conditions, is based on IEC Publication 555-3, *Disturbances in supply systems caused by household appliances and similar electrical equipment*—Part 3: *Voltage fluctuations.*

Examples of the equipment concerned include appliances for cooking and heating, motor driven or magnetically driven appliances and portable tools, all of which are fitted with electronic or electromechanical control devices.

The combination of large current variations and high mains impedance can cause excessive changes in supply voltage and examples of these voltage changes are given. The criterion adopted is that voltage fluctuations produced by an appliance should not adversely affect lighting equipment on the same supply system.

CONTENTS

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Part 3—Limitation of voltage fluctuations caused by household and similar electrical appliances

1 SCOPE Part 3 of this Standard specifies—

(a) maximum permissible values of voltage fluctuation which may be produced by an appliance tested individually under specified conditions; and

(b) practical methods of test and calculation.

NOTE: These requirements should not be confused with requirements relating to the quality of the supply to which a consumer is connected.

Part 3 of this Standard applies to electrical and electronic appliances for household and similar applications, supplied directly from low-voltage distribution networks. The switching on and off of such appliances may cause voltage changes in the supply mains which could produce undesirable effects such as flicker in incandescent lamps.

The characteristics given in this Standard relate to appliances with a full power rating not exceeding 4.8 kV.A, and which can be connected to alternating current networks with a nominal frequency of 50 Hz and the following nominal voltages:

(a) 240/415 V, three-phase, three-wire or four-wire.

(b) 240 V or 415 V single-phase, two-wire.

NOTE: 240 V nominal includes rated voltages from 200 V to 250 V, and 415 V nominal includes rated voltages between 380 V and 480 V.

Such equipment includes, but is not limited to, appliances for cooking and space heating, thermal appliances, motor-driven or magnetically driven appliances, portable tools, and similar appliances.

Part 3 does not apply to the following equipment, for which limits are specified in Part 4:

(i) Equipment subject to individual consideration by the supply authority before it may be connected to the system.

(ii) Appliances intended exclusively for industrial, professional or commercial purposes.

(iii) Manually switched appliances.

(iv) Appliances producing less than one voltage change per hour.

(v) Appliances producing more than 1800 voltage changes per minute.

(vi) Equipment with ratings exceeding 4.8 kV.A.

Limits of voltage fluctuations for Items (i), (ii) and (vi) are specified in AS 2279.4.

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

AS
2279 Disturbances in mains supply networks
2279.4 Limitation of voltage fluctuations caused by industrial equipment

IEC
868 Flickermeter. Functional and design specifications

3 DEFINITIONS For the purpose of this Standard, the following definitions apply:

3.1 Voltage change (see Figure 2)—a variation of the r.m.s. (or peak) value of the supply voltage between two adjacent levels each of which is sustained for a definite but unspecified time.

NOTE: This term 'voltage change' is not synonymous with either the term 'voltage fluctuation' (see Clause 3.6) or the term 'flicker' (see Clause 3.11).

3.2 Magnitude of a voltage change (see Figure 2)—the difference between the r.m.s. (or peak) values of the voltage, before and after a voltage change.

3.3 Relative voltage change (see Figure 2)—the ratio of the magnitude of a voltage change to the specified value of the voltage.

3.4 Duration of a voltage change (see Figure 2)—the interval of time for the voltage to increase or decrease from the initial value to the final value.

3.5 Voltage change interval (see Figure 2)—the interval of time which elapses from the beginning of one voltage change to the beginning of the next voltage change.