AS 3720—1989
IEC 833(1987)

Australian Standard®

Measurement of power-frequency electric fields

This Australian Standard was prepared by Committee EL/7, Power Switchgear. It was approved on behalf of the Council of Standards Australia on 20 April 1989 and published on 13 October 1989.

The following interests are represented on Committee EL/7:

Australian British Chamber of Commerce
Australian Electrical and Electronic Manufacturers Association
Electricity Supply Association of Australia
Institution of Engineers, Australia
Railways of Australia Committee
Testing Authorities

Additional interests participating in preparation of Standard:

Commonwealth Scientific & Industrial Research Organization
Telecom Australia

This Standard was issued in draft form for comment as DR 88039.

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First published as AS 3720—1989.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 5765 6

PREFACE

This Standard was prepared by the Standards Australia Committee on Power Switchgear.

It is identical with and has been reproduced from IEC 833 (1987), *Measurement of power-frequency electric fields.*

It is intended primarily to specify standard methods for use by power authorities in measuring electric field strengths near the ground plane in the vicinity of high voltage lines and conductors.

At locations closer to the high voltage conductors, where the field is non-uniform, power authorities have used the following methods, not covered by this Standard:

(a) The determination of maximum field strength using three-coordinate probes.

(b) The determination of average field strength using body current measurements.

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STANDARDS AUSTRALIA

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Measurement of power-frequency electric fields

1. Scope

This standard is applicable to the measurement of electric field strength at power frequencies in air for quasi-uniform electric fields with instrumentation in common use and/or commercially available. The standard is applicable to other instruments provided they are calibrated according to the procedures described in this standard.

2. Object

The objects of this standard are:

- to define the terms used;
- to describe the basic operating principles of measuring instruments;
- to specify methods for calibration and calibration checks;
- to specify electric field strength measurement procedures;
- to identify significant sources of measurement error and to give limits of permissible uncertainties.

3. Definitions

3.1 *Electric field strength*

When a conductor is electrically charged, the space in the vicinity of the conductor is affected so that a charged particle, when introduced into the affected space, experiences a force in a well-defined direction at any instant. An electric field is said to exist in the affected space, and the electric field strength at any point is a vector quantity equal to the force per unit positive charge located at that point. Two types of electric fields are considered in this document, single-phase a.c. fields and three-phase a.c. fields. The field strength magnitude is specified in units of volts per metre.

3.2 *Single-phase a.c. fields*

A single-phase source of alternating voltage, when connected to conducting boundary surfaces (for example, electrodes), produces at any point in the affected space an electric field vector which oscillates along a fixed axis.