AS 62052.31:2017

Australian STANDARD

Electricity metering equipment (AC)—General requirements, tests and test conditions

Part 31: Product safety requirements and tests (IEC 62052-31:2015 (ED.1.0) MOD)

STANDARDS Australia

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- Australian Chamber of Commerce and Industry
- Australian Energy Council
- Australian Energy Market Operator
- Australian Industry Group
- Consumers Federation of Australia
- Electrical Regulatory Authorities Council
- Energy Networks Association
- National Electrical and Communications Association
- National Measurement Institute

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Australian Standard®

Electricity metering equipment (AC)—General requirements, tests and test conditions

Part 31: Product safety requirements and tests (IEC 62052-31:2015 (ED.1.0) MOD)

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-011, Electricity Metering Equipment.

The objective of this Standard is to communicate to users, and also provide manufacturers, with the product safety and associated type test requirements for electricity metering equipment intended for use in Australia.

Recent policy and regulatory changes underway in Australia's National Electricity Market (NEM) are intended to encourage the accelerated roll-out of advanced metering, replacing the predominantly electromechanical metering fleet presently installed. The introduction of this Standard anticipates this large, impending change-over of metering equipment.

The Council of Australian Governments (COAG) Energy Council directed reforms that resulted in the Australian Energy Market Commission (AEMC) establishing new National Electricity Rules. These Rules mandate advanced meters for new, upgraded and replacement metering installations from December 2017. Advanced meters contain new electrical components, such as disconnect/reconnect supply control switches, interfaces to communications equipment and advanced electronic circuitry, all of which are required to operate in an exposed electrical environment, resulting in safety implications. IEC 62052-31 was developed with advanced metering in mind and with the objective of more comprehensively addressing the safety issues associated with such advanced metering.

This Standard is an adoption with national modifications and has been reproduced from IEC 62052-31:2015 (ED.1.0), *Electricity metering equipment (AC)—General requirements, tests and test conditions*, Part 31: *Product safety requirements and tests*.

This Standard has been varied and appended from the IEC Standard to take account of Australian conditions. The Australian variations to the IEC source text are listed in Appendix ZZ.

This Standard is structured as follows:

(a) Preface.

(b) IEC 62052-31:2015, (ED.1.0) (unedited from the Contents page to the final clause of the source document).

(c) Appendix ZZ, Variations to IEC 62052-31:2015 (ED.1.0) for application in Australia, addressing the issues of-

  (i) environmental conditions, including higher temperatures and protection from weather;

  (ii) electrical insulation requirements for safety of self-contained metering equipment;

  (iii) durability and safety of smaller conductors in large terminals;

  (iv) safe overload performance compatible with the fault levels and associated protective devices applicable to the public electricity distribution network in Australia; and

  (v) durability and safety within an environment of high lightning risk and prevalence of open conductors in the Australian electricity distribution network.

As this Standard is reproduced from an International Standard, the following applies:

(A) In the source text 'this part of IEC 62052' should read 'this Australian Standard'.

(B) A full point should be substituted for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific standards.

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

This Standard signals the beginning of a programme of adoptions of IEC 62052 and IEC 62053 series Standards on electricity metering equipment. Existing adoptions will be updated and a new Part (AS 62053.24) in the series will be added as follows:

AS 62052.11 (General). Modified adoption of IEC 62052-11:2016 (ED.1.1).

AS 62052.21 (Tariff and load control). Modified adoption of IEC 62052-21:2016 (ED.1.1).

AS 62053.21 (Class 1/2 kWh). Modified adoption of IEC 62053-21:2016 (ED.1.1).

AS 62053.22 (Class 0.2/0.5 kWh). Modified adoption of IEC 62053-22:2016 (ED.1.1)

AS 62053.23 (Class 2/3 kvarh). Modified adoption of IEC 62053-23:2016 (ED.1.1).

AS 62053.24 (Class 1.0/0.5 kvarh). Modified adoption of IEC 62053-24:2016 (ED.1.1)

Attention is also drawn to the significant change posed by the implementation the National Electricity Rules in Australia, commencing December 2017, which obliges the use of direct connected metering equipped with supply control switches. During the transition to the full suite of AS 62052 and AS 62053 Standards above, conformance is required to the following parts of Clause 6.9.8.4 (including Table 22) as modified by Appendix ZZ:

1 UC3 fault current performance with conformance determined by test sequence, as detailed in Clause 6.10.6.1, Test sequence and sample plan, (including Table 26) referencing only SCS samples 2, 3 and 4.

2 Table 22, Footnote f which references Requirement 10 and requires that ‘For direct connected metering equipment intended for use at the interface with the Australian public electricity distribution network, I_{ovl} shall be ≥128 A’, with limited conformance determined only as per clauses—

(i) 10.1, Surface temperature limits for protection against burns; and

(ii) 10.2, Temperature limits for terminals.

This transition commences with the publication of this Standard and ends with the withdrawal of the following Standards:

AS 62052.11—2005

AS 62052.21—2006

AS 62053.21—2005

AS 62053.22—2005

AS 62053.23—2006

CONTENTS

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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International Standard IEC 62052-31 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

The text of this standard is based on the following documents:

FDIS	Report on voting
13/1639/FDIS	13/1645/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62052 series, under the general title *Electricity metering equipment (AC) – General requirements, tests and test conditions*, can be found on the IEC website.

In this standard, the following print types are used:

- requirements and definitions: in roman type;
- NOTES: in smaller roman type;
- *conformity and tests: in italic type.*

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

NOTE 1 The following text is based on IEC Guide 104, ISO/IEC Guide 51 and IEC 60255-27:2013.

The IEC addresses safety aspects by establishing *basic*, *group* and *product* safety publications.

A *basic safety publication* covers a specific safety-related matter, applicable to many electrotechnical products. It is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51. It is not intended for use by manufacturers or certification bodies. One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements, test methods or test conditions of basic safety publications will not apply unless specifically referred to or included in the relevant publications.

A *group safety publication* covers all safety aspects of a specific group of products within the scope of two or more product TCs. Group safety publications are primarily intended to be stand-alone product safety publications, but may also be used by TCs as source material in the preparation of their publications.

A *product safety publication* covers all safety aspects of one or more products within the scope of a single product TC.

Existing product standards established by TC 13 include a range of safety requirements, test methods and test conditions. However, an important requirement of IEC Guide 104:2010, 5.2.3 has not been met so far:

> *"Safety aspects and performance aspects should not be covered in the same publication, as this makes it difficult to assess conformity with safety requirements alone. If, exceptionally, there are reasons to cover them in the same publication, safety aspects and performance aspects shall be clearly distinguished from each other. If there are performance criteria which have safety implications, these are considered to be safety aspects and this shall be made clear in the publication."*

In addition, some important aspects of product safety, such as safety under single fault conditions, have not been covered so far.

The objectives of the development of this International Standard are the following:

- to specifically reference and include relevant requirements, test methods or test conditions of relevant basic safety publications so that they become applicable;
- to specifically reference and include – where appropriate, in a modified form – relevant requirements, test methods or test conditions of relevant group safety publications;
- to consider the latest developments in the technology used for the design and manufacture of equipment for electrical energy measurement and control;
- to remove any ambiguity resulting from the lack of a comprehensive product safety standard for products in the Scope of TC 13;
- to achieve a uniform approach to product safety throughout the international metering industry.

This *product safety standard* is based on, among others, the following:

- the *basic safety standard* IEC 60664-1:2007, established by TC 109;
- standards from the IEC 60364 series related to electrical installations of buildings, established by TC 64;
- the *group safety standard* IEC 61010-1:2010 established by TC 66;

- the *group safety standard* IEC 62477-1:2012 established by TC 22;
- IEC 60255-27:2013, a *product safety standard* for measuring relays and protection equipment, established by TC 95. These products are similar in their design and to some extent in their use in equipment for electrical energy measurement and control,

To facilitate the use of this standard, an integral text has been prepared, with appropriate 539 references to source documents.

This standard cancels and replaces the safety requirements specified in earlier standards established by IEC TC 13. See also Annex L (Informative).

NOTE 2 When this standard is published, an amendment to the relevant standards affected by this standard in IEC 62052, IEC 62053 and IEC 62054 will be published, to indicate which parts of those standards are replaced / cancelled by this standard.

Being a product safety standard, this standard takes precedence over the group safety standards IEC 61010-1:2010 and IEC 62477-1:2012.

AUSTRALIAN STANDARD

Electricity metering equipment (AC)—General requirements, tests and test conditions

Part 31:
Product safety requirements and tests
(IEC 62052-31:2015 (ED.1.0) MOD)

1 Scope and object

1.1 Scope

This part of IEC 62052 specifies product safety requirements for equipment for electrical energy measurement and control.

NOTE 1 For other requirements, see the relevant standards.

This International Standard applies to newly manufactured metering equipment designed to measure and control electrical energy on 50 Hz or 60 Hz networks with a voltage up to 600 V, where all functional elements, including add-on modules are enclosed in or form a single case.

NOTE 2 The voltage mentioned above is the voltage line-to-neutral derived from nominal voltages. See Table 7.

This International Standard also applies to metering equipment containing supply and load control switches, but only those which are electromechanical in operation.

NOTE 3 For components and sub-assemblies, see Clause 13.

When such equipment is designed to be installed in a specified matching socket, then the requirements apply to, and the tests shall be performed on, equipment installed in its specified matching socket. However, requirements for sockets and inserting / removing the meters from the socket are outside the scope of this standard.

This International Standard is also applicable to auxiliary input and output circuits.

NOTE 4 Examples are impulse inputs and outputs, control inputs and outputs, circuits for meter data exchange.

In this standard distinction is made between:

- electromechanical meters, static meters and equipment for tariff and load control;
- direct connected, current transformer operated, voltage and current transformer operated meters;
- protective class I and protective class II equipment;
- wall or cabinet mounted, rack mounted and panel mounted equipment;
- equipment intended for indoor use and outdoor use.

Equipment used in conjunction with equipment for electrical energy measurement and control may need to comply with additional safety requirements. See also Clause 13.

NOTE 5 Examples are telecommunication modems and customer information units.

This International Standard does not apply to:

- equipment where the voltage line-to-neutral derived from nominal voltages exceeds 600 V;
- portable meters;

NOTE 6 Portable meters are meters that are not permanently connected.

