



**Electricity metering equipment (a.c.)—
Tariff and load control**

**Part 11: Particular requirements for
electronic ripple control receivers (IEC
62054-11:2004 (ED.1.1), MOD)**

STANDARDS
Australia



AS 62054.11:2018

This Australian Standard® was prepared by EL-011, Electricity Metering Equipment. It was approved on behalf of the Council of Standards Australia on 2 October 2018.

This Standard was published on 25 October 2018.

The following are represented on Committee EL-011:

- 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 Australia
- National Electrical and Communications Association
- National Measurement Institute

This Standard was issued in draft form for comment as DR AS 62054.11:2018.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.saiglobal.com (sales and distribution)

ISBN 978 1 76072 206 7



Electricity metering equipment (a.c.)— Tariff and load control

Part 11: Particular requirements for electronic ripple control receivers (IEC 62054-11:2004 (ED.1.1), MOD)

Originates as AS 1284.6—1992.
Revised and redesignated as AS 62054.11—2006.
Third edition AS 62054.11:2018.

COPYRIGHT

© IEC 2018 — All rights reserved
© Standards Australia Limited 2018

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Published by SAI Global Pty Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia.

Preface

This Standard was prepared by the Standards Australia Committee EL-011, Electricity Metering Equipment, to supersede AS 62054.11—2006, *Electricity metering (ac) — Tariff and load control, Part 11: Particular requirements for electronic ripple control receivers*.

The objective of this Standard is to specify particular requirements for the type test of newly manufactured indoor electronic ripple control receivers for the reception and interpretation of pulses of a single audio frequency superimposed on the voltage of the electricity distribution network and for the execution of the corresponding switching operations. In this system the mains frequency is generally used to synchronize the transmitter and receivers. Neither the control frequency nor the encoding are standardized in this Standard.

This Standard is an adoption with national modifications, and has been reproduced from, IEC 62054-11:2004+AMD1:2016 CSV (ED.1.1), *Electricity metering (a.c.) — Tariff and load control — Part 11: Particular requirements for electronic ripple control receivers*.

[Appendix ZZ](#) lists the variations for the application of this Standard in Australia.

As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “this part of IEC 62054” should read “this Australian Standard”.
- (b) A full point substitutes 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” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
INTRODUCTION TO AMENDMENT 1.....	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 Standard electrical values.....	7
5 Mechanical requirements and tests.....	7
5.1 Operation status indicator.....	8
6 Climatic conditions, requirements and tests.....	8
7 Electrical requirements and tests.....	8
7.1 Supply voltage.....	8
7.2 Heating.....	9
7.3 Insulation.....	9
7.4 Output elements.....	9
7.5 Functional requirements and tests – Control performance.....	9
7.6 Electromagnetic compatibility (EMC).....	11
7.7 Radio interference suppression.....	16
8 Test conditions and type test.....	16
Annex A (normative) Harmonic levels for testing ripple control receivers.....	17
Annex B (normative) Selection of frequency for tests with harmonics.....	18
Annex C (normative) Combination of parameters for operation and non-operation tests.....	19
Annex D (informative) Acceptance tests.....	20
Annex E (informative) Code terms.....	21
Annex F (informative) Example of a test configuration for operation and non-operation tests and for measurement of disturbance-limit curves.....	22
Annex G (informative) Values of the influence quantities for the different tests.....	23
Figure B.1 – Example for selection of the frequency H_C	18
Figure B.2 – Frequency deviations for measurement of the disturbance-limit curves.....	18
Figure F.1 – Test configuration.....	22
Table A.1 – Recommended values for 50 Hz networks.....	17
Table C.1 – Combination of parameters.....	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICITY METERING (AC) –
TARIFF AND LOAD CONTROL –**

**Part 11: Particular requirements for electronic ripple
control receivers**

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.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

DISCLAIMER

**This Consolidated version is not an official IEC Standard and has been prepared for
convenience. Only the current versions of the standard and its amendment(s)
are to be considered the official documents.**

**This Consolidated version of IEC 62054-11 bears the edition number 1.1. It consists of
the first edition (2004-05) [documents 13/1306/FDIS and 13/1315/RVD] and its
amendment 1 (2016-11) [documents 13/1697/FDIS and 13/1711/RVD]. The technical
content is identical to the base edition and its amendment.**

**This Final version does not show where the technical content is modified by
amendment 1. A separate Redline version with all changes highlighted is available in
this publication.**

International Standard IEC 62054-11 has been prepared by IEC technical committee 13: Equipment for electrical energy measurement and load control. This standard, in conjunction with IEC 62052-21, cancels and replaces IEC 61037:1990, *Electricity metering – Tariff and load control – Particular requirements for electronic ripple control receivers*.

This standard is to be used in conjunction with IEC 62052-21 and the relevant parts of the IEC 62059 series.

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

The committee has decided that the contents of the base publication and its amendment 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.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 2 years from the date of publication.

INTRODUCTION

This standard distinguishes between protective class I and protective class II equipment

The test levels are regarded as minimum values to guarantee the proper functioning of the equipment under normal working conditions. For special applications, other test levels might be necessary and should be agreed on between the user and the manufacturer.

Ripple control receivers are components of a system of remote control permitting the simultaneous operation of a large number of receivers from a central point. The signal generally used for this purpose is an audio-frequency voltage superimposed on the mains frequency and coded in the form of pulses, which can provide a multiplicity of control functions. Other types of signals, such as frequency modulation, deformation of the main frequency, etc. may also be used. These signals are propagated through the electricity supply network, from the injection point to the receiver sites.

Some characteristics of such systems, for example, the value of the frequency or the method of coding, are not standardized here.

To facilitate the application of this standard the following principles should be applied.

- 1) The requirements of this standard are not limiting. If it is absolutely unavoidable, a user can add additional technical requirements in his specification.

The technical requirements and tests relate to the general functioning of the receiver. The method of operation of the functional elements is not specified. These requirements and tests may, however, be the subject of additional technical agreements.

- 2) Ripple control systems are auxiliary equipment for network operation. Their design is determined by the network characteristics and other factors. At the present time rapid development of power electronic equipment is leading to a parallel increase in the amount of harmonic distortion in the supply voltage. The harmonic levels indicated in this standard take account of this development. They are not to be considered as values that could be regarded as permissible on the network but as recommended values for designing and testing receivers. These recommended levels could be adapted to particular characteristics of networks under consideration.

Receivers designed for use with transmitters already in operation and having a control frequency equal, or very close, to a harmonic, need not conform to the whole of the requirements of this standard.

For information, the relevant parts of IEC 62052, IEC 62054 and IEC 62059 are listed below.

IEC 62052-21:2004, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 21: Tariff and load control equipment*
Amendment 1 (2016)

IEC 62052-31:2015, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests*

IEC 62054-11, *Electricity metering – Tariff and load control – Part 11: Particular requirements for electronic ripple control receivers (Replaces the particular requirements of IEC 61037.)*

IEC 62054-21, *Electricity metering – Tariff and load control – Part 21: Particular requirements for time switches (Replaces the particular requirements of IEC 61038.)*

IEC 62059-11, *Electricity metering equipment – Dependability – Part 11: General concepts*

IEC 62059-21, *Electricity metering equipment – Dependability – Part 21: Collection of meter dependability data from the field*

IEC 62059-41, *Electricity metering equipment – Dependability – Part 41: Reliability prediction*¹

INTRODUCTION TO AMENDMENT 1

The purpose of this amendment is to identify and remove all safety related requirements and tests of IEC 62054-11:2004 that are replaced and extended by the complete set of requirements and tests in IEC 62052-31:2015.

¹ To be published.

ELECTRICITY METERING (AC) – TARIFF AND LOAD CONTROL –

Part 11: Particular requirements for electronic ripple control receivers

1 Scope

This part of IEC 62054 specifies particular requirements for the type test of newly manufactured indoor electronic ripple control receivers for the reception and interpretation of pulses of a single audio frequency superimposed on the voltage of the electricity distribution network and for the execution of the corresponding switching operations. In this system the mains frequency is generally used to synchronize the transmitter and receivers. Neither the control frequency nor the encoding are standardized in this standard.

This standard gives no requirements for constructional details internal to the receiver.

In the case where ripple control functionality is integrated in multifunction electricity metering equipment, the relevant parts of this standard apply.

This standard does not cover the acceptance tests and the conformity tests. Nevertheless, an example of what could be an acceptance test is given in Annex D.

The dependability aspect is covered by the documents of the IEC 62059 series.

The safety aspect is covered by IEC 62052-31:2015.

When using this standard in conjunction with IEC 62052-21, the requirements of this standard take precedence over those of IEC 62052-21 with regard to any item already covered in it.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references only, the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62052-21:2014, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 21: Tariff and load control equipment*
Amendment 1 (2016)

IEC 62052-31:2015, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests*

3 Terms and definitions

For the purposes of this document, the definitions of IEC 62052-21 apply.

4 Standard electrical values

The values given in IEC 62052-21 apply.