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Electricity metering equipment - General requirements, tests and test conditions - Part 41: Energy registration methods and requirements for multi-energy and multi-rate meters

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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See Eesti standard EVS-EN IEC 62052-41:2022 sisaldab Euroopa standardi EN IEC 62052-41:2022 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 62052-41:2022 consists of the English text of the European standard EN IEC 62052-41:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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ICS 19.080, 91.140.50

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62052-41

December 2022

ICS 17.220.20

English Version

Electricity metering equipment - General requirements, tests and test conditions - Part 41: Energy registration methods and requirements for multi-energy and multi-rate meters (IEC 62052-41:2022)

Équipement de comptage de l'électricité - Exigences générales, essais et conditions d'essai - Partie 41: Méthodes d'enregistrement de l'énergie et exigences relatives aux compteurs à tarifs multiples et aux compteurs à énergies multiples
(IEC 62052-41:2022)

Elektrizitätszähler - Allgemeine Anforderungen, Prüfungen und Prüfbedingungen - Teil 41: Energieerfassungsmethoden und -anforderungen für Zähler für unterschiedliche elektrische Energiearten und Mehrtarifzähler
(IEC 62052-41:2022)

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European foreword

The text of document 13/1869/FDIS, future edition 1 of IEC 62052-41, prepared by IEC/TC 13 "Electrical energy measurement and control" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62052-41:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-09-02
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In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 61000-4-30:2015 NOTE Harmonized as EN 61000-4-30:2015 (not modified)

IEC 61557-12:2018 NOTE Harmonized as EN IEC 61557-12:2022 (not modified)

IEC 61869 (series) NOTE Harmonized as EN IEC 61869 (series)

IEC 62586-1:2017 NOTE Harmonized as EN 62586-1:2017 (not modified)

IEC 62586-2:2017 NOTE Harmonized as EN 62586-2:2017 (not modified)

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IEC 62052-41

Edition 1.0 2022-10

INTERNATIONAL STANDARD

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Electricity metering equipment – General requirements, tests and test conditions –
Part 41: Energy registration methods and requirements for multi-energy and multi-rate meters

Équipement de comptage de l'électricité – Exigences générales, essais et conditions d'essai –
Partie 41: Méthodes d'enregistrement de l'énergie et exigences relatives aux compteurs à tarifs multiples et aux compteurs à énergies multiples

IEC 62052-41:2022-10(en-fr)

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IEC 62052-41

Edition 1.0 2022-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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INTERNATIONAL
ELECTROTECHNICAL
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COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 17.220.20

ISBN 978-2-8322-5813-2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICITY METERING EQUIPMENT – GENERAL REQUIREMENTS, TESTS AND TEST CONDITIONS –

Part 41: Energy registration methods and requirements for multi-energy and multi-rate meters

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IEC 62052-41 has been prepared by IEC technical committee 13: Electrical energy measurement and control. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
13/1869/FDIS	13/1873/RVD

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

The language used for the development of this International Standard is English.

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

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

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

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.

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INTRODUCTION

IEC 62052 series and IEC 62053 series define the physical, safety and metrological aspects of electricity meters. This document defines the requirements for multi-energy and multi-rate meters.

This part of IEC 62052 is to be used with relevant parts of the IEC 62052, IEC 62053, IEC 62055-31, IEC 62058 and IEC 62059 series:

IEC 62052-11:2020, *Electricity metering equipment – General requirements, tests and test conditions – Part 11: Metering equipment*

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

IEC 62053-11: 2003/AMD1:2016, *Electricity metering equipment (a.c.) – Particular requirements – Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2)*

IEC 62053-21:2020, *Electricity metering equipment – Particular requirements – Part 21: Static meters for AC active energy (classes 0,5, 1 and 2)*

IEC 62053-22:2020, *Electricity metering equipment – Particular requirements – Part 22: Static meters for AC active energy (classes 0,1 S, 0,2 S and 0,5 S)*

IEC 62053-23:2020, *Electricity metering equipment – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*

IEC 62053-24:2020, *Electricity metering equipment – Particular requirements – Part 24: Static meters for fundamental component reactive energy (classes 0,5 S, 1 S, 1, 2 and 3)*

IEC 62053-41:2021, *Electricity metering equipment – Particular requirements – Part 41: Static meters for DC energy (classes 0,5 and 1)*

IEC 62055-31:2022, *Electricity metering – Payment systems – Part 31: Particular requirements – Static payment meters for active energy (classes 0,5, 1 and 2)*

IEC 62058-11:2008, *Electricity metering equipment (AC) – Acceptance inspection – Part 11: General acceptance inspection methods*

IEC 62058-21:2008, *Electricity metering equipment (AC) – Acceptance inspection – Part 21: Particular requirements for electromechanical meters for active energy (classes 0,5, 1 and 2)*

IEC 62058-31:2008, *Electricity metering equipment (AC) – Acceptance inspection – Part 31: Particular requirements for static meters for active energy (classes 0,2 S, 0,5 S, 1 and 2)*

IEC TR 62059-11:2002, *Electricity metering equipment – Dependability – Part 11: General concepts*

IEC TR 62059-21:2002, *Electricity metering equipment – Dependability – Part 21: Collection of meter dependability data from the field*

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IEC 62059-32-1:2011, *Electricity metering equipment – Dependability – Part 32-1: Durability – Testing of the stability of metrological characteristics by applying elevated temperature*

This part of IEC 62052 is a standard for type testing electricity meters. This document is intended to be used in conjunction with the relevant parts of IEC 62052, IEC 62053 and IEC 62055-31. When any requirement in this document concerns an item already covered in the relevant parts of IEC 62052, IEC 62053 and IEC 62055-31, the requirements of this document take precedence.

The test levels are regarded as minimum values that provide for the proper functioning of the meter under normal working conditions. For special application, other test levels might be necessary and should be agreed on between the manufacturer and the purchaser.

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ELECTRICITY METERING EQUIPMENT – GENERAL REQUIREMENTS, TESTS AND TEST CONDITIONS –

Part 41: Energy registration methods and requirements for multi-energy and multi-rate meters

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1 Scope

This part of IEC 62052 applies only to newly manufactured multi-energy and/or multi-rate static meters and it applies to their type tests only.

NOTE 1 For other general requirements, such as electrical, mechanical, safety, marking, dependability, etc., see the relevant parts of IEC 62052 or IEC 62059. For accuracy requirements and other requirements specific to class indices, see the relevant parts of IEC 62053.

This document applies to electricity metering equipment designed to:

- measure and control electrical energy on networks with voltage up to 1 000 V AC, or 1 500 V DC;

NOTE 2 For AC electricity meters, the voltage mentioned above is the line-to-neutral voltage derived from nominal voltages. See IEC 62052-31:2015, Table 7.

NOTE 3 For meters designed for operation with LPITs, only the metering unit is considered a low voltage device. If the LPITs are rated for voltages exceeding 1 000 V AC, or 1 500 V DC, the combination of the metering unit and LPITs is not a low voltage device.

- have all functional elements, including add-on modules, enclosed in, or forming a single meter case with exception of indicating displays;
- operate with integrated displays;
- operate with detached indicating displays, or without an indicating display;
- be installed in a specified matching socket or rack;
- optionally, provide additional functions other than those for measurement of electrical energy.

Meters designed for operation with Low Power Instrument Transformers (LPITs as defined in the IEC 61869 series) may be tested for compliance with this document and the relevant IEC 62053 series documents only if such meters and their LPITs are tested together as directly connected meters.

NOTE 4 Modern electricity meters typically contain additional functions such as measurement of voltage magnitude, current magnitude, power, frequency, power factor, etc.; measurement of power quality parameters; load control functions; delivery, time, test, accounting, recording functions; data communication interfaces and associated data security functions. The relevant standards for these functions may apply in addition to the requirements of this document. However, the requirements for such functions are outside the scope of this document.

NOTE 5 Product requirements for power monitoring devices and measurement functions such as voltage magnitude, current magnitude, power, frequency, etc., are covered in IEC 61557-12:2018. However, devices compliant with IEC 61557-12:2018 are not intended to be used as billing meters, unless they are also compliant with IEC 62052-11 and relevant IEC 62053-xx accuracy class standards.

NOTE 6 Product requirements for power quality monitoring instruments are covered in IEC 62586-1:2017. Requirements for power quality measurement techniques (functions) are covered in IEC 61000-4-30:2015. Requirements for testing of the power quality measurement functions are covered in IEC 62586-2:2017.

This document does not apply to:

- meters for which the line-to-neutral voltage derived from nominal voltages exceeds 1 000 V AC, or 1 500 V DC;
- meters intended for connection with low power instrument transformers (LPITs as defined in the IEC 61869 series of standards) when tested without such transformers;
- metering systems comprising multiple devices (except for LPITs) physically remote from one another;
- portable meters;

NOTE 7 Portable meters are meters that are not permanently connected.

- meters used in rolling stock, vehicles, ships and airplanes;
- laboratory and meter test equipment;
- reference standard meters;

NOTE 8 Nominal values, accuracy classes, requirements and test methods for reference standard meters are specified in IEC 62057-1 (First edition under preparation. Stage at the time of publication: IEC FDIS 62057-1:2022).

- data interfaces to the register of the meter;
- matching sockets or racks used for installation of electricity metering equipment.

This document does not cover measures for the detection and prevention of fraudulent attempts to compromise a meter's performance (tampering).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 62052-11:2020, *Electricity metering equipment – General requirements, tests and test conditions – Part 11: Metering equipment*

IEC 62053-21:2020, *Electricity metering equipment – Particular requirements – Part 21: Static meters for AC active energy (classes 0,5, 1 and 2)*

IEC 62053-22:2020, *Electricity metering equipment – Particular requirements – Part 22: Static meters for AC active energy (classes 0,1 S, 0,2 S and 0,5 S)*

IEC 62053-23:2020, *Electricity metering equipment – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*

IEC 62053-24:2020, *Electricity metering equipment – Particular requirements – Part 24: Static meters for fundamental component reactive energy (classes 0,5 S, 1 S, 1, 2 and 3)*

IEC 62053-41:2021, *Electricity metering equipment – Particular requirements – Part 41: Static meters for DC energy (classes 0,5 and 1)*

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