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STAATILISED VAHELDUVVOOLU AKTIIVENERGIA  
ARVESTID (KLASS A, B JA C)

Electricity metering equipment - Part 3: Particular  
requirements - Static meters for AC active energy (class  
indexes A, B and C)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 50470-3:2022 sisaldab Euroopa standardi EN 50470-3:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 50470-3:2022 consists of the English text of the European standard EN 50470-3:2022.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.06.2022.	Date of Availability of the European standard is 03.06.2022.
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## English Version

**Electricity metering equipment - Part 3: Particular requirements -  
Static meters for AC active energy (class indexes A, B and C)**

Équipement de comptage d'électricité - Partie 3: Exigences  
particulières - Compteurs statiques d'énergie active en  
courant alternatif (indices de classe A, B et C)

Elektrizitätszähler - Teil 3: Besondere Anforderungen -  
Elektronische Wechselstrom Wirkverbrauchszähler der  
Genauigkeitsklassen A, B und C

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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## European foreword

This document (EN 50470-3:2022) has been prepared by CLC/TC 13 “Electrical energy measurement and control”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-04-11
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2025-04-11

This document supersedes EN 50470-3:2006 and all of its amendments and corrigenda.

EN 50470-3:2022 includes the following significant technical changes with respect to EN 50470-3:2006: it is based on EN IEC 62052-11:2021/A11:2022 instead of EN 50470-1:2006.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of this document.

This document is related to:

- EN IEC 62053-21:2021/A11:2021, Electricity metering equipment – Particular requirements – Part 21: Static meters for AC active energy (classes 0,5, 1 and 2)
- EN IEC 62053-22:2021/A11:2021, Electricity metering equipment – Particular requirements – Part 22: Static meters for AC active energy (classes 0,1 S, 0,2 S and 0,5 S).

NOTE Terms differences for accuracy classes in related standards (EN IEC 62053-21:2021/A11:2021 and EN IEC 62053-22:2021/A11:2021) and Directive 2014/32/EU are listed in Annex C.

The structure of the standards is similar; modifications in this document are provided in the perspective of compliance with the Essential Requirements of Directive 2014/32/EU on Measuring Instruments (MID).

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

# 1 Scope

This document applies only to static watt-hour meters of accuracy classes A, B and C for the measurement of alternating current electrical active energy in 50 Hz or 60 Hz networks and it applies to their type tests.

NOTE 1 For general requirements, such as construction, EMC, safety, dependability etc., see the relevant EN 62052 series or EN 62059 series.

This document applies to electricity metering equipment designed to:

- measure and control electrical energy on electrical networks (mains) with voltage up to 1 000 V AC;

NOTE 2 For AC electricity meters, the voltage mentioned above is the line-to-neutral voltage derived from nominal voltages. See EN 62052-31:2016, Table 7. EN 62052-31:2016 covers AC voltages only up to 600 V and Ed. 2 of EN IEC 62052-31 will cover AC voltages up to 1000 V.

- have all functional elements, including add-on modules, enclosed in, or forming a single meter case with exception of indicating displays;
- operate with integrated or detached indicating displays;
- be installed in specified matching sockets or racks;
- 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 EN 61869 series) can be tested for compliance with this document only if such meters and their LPITs are tested together and meet the requirements for directly connected meters.

NOTE 3 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 could apply in addition to the requirements of this document. However, the requirements for such functions are outside the scope of this document.

NOTE 4 Product requirements for power metering and monitoring devices (PMDs) and measurement functions such as voltage magnitude, current magnitude, power, frequency, etc., are covered in EN 61557-12:2008. However, devices compliant with EN 61557-12:2008 are not intended to be used as billing meters unless they are also compliant with the EN IEC 62052-11:2021/A11:2022 and EN 50470-3:2022 standards.

NOTE 5 Product requirements for power quality instruments (PQIs) are covered in EN 62586-1:2017. Requirements for power quality measurement techniques (functions) are covered in EN 61000-4-30:2015. Requirements for testing of the power quality measurement functions are covered in EN 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;
- meters intended for connection with low power instrument transformers (LPITs as defined in the EN 61869 series) when tested without such transformers;
- metering systems comprising multiple devices (except of LPITs) physically remote from one another;
- portable meters;

NOTE 6 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;
- data interfaces to the register of the meter;
- matching sockets or racks used for installation of electricity metering equipment;
- any additional functions provided in electrical energy meters.

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

NOTE 7 Nevertheless, specific tampering detection and prevention requirements, and test methods, as relevant for a particular market are subject to the agreement between the manufacturer and the purchaser.

NOTE 8 Specifying requirements and test methods for fraud detection and prevention would be counterproductive, as such specifications would provide guidance for potential fraudsters.

NOTE 9 There are many types of meter tampering reported from various markets; therefore, designing meters to detect and prevent all types of tampering could lead to unjustified increase in costs of meter design, verification and validation.

NOTE 10 Billing systems, such as smart metering systems, are capable of detecting irregular consumption patterns and irregular network losses which enable discovery of suspected meter tampering.

NOTE 11 For transformer operated meters paired with current transformers (CTs) according to EN 61869-2: the standard CT measuring range is specified from  $0,05 I_n$  to  $I_{max}$  for accuracy classes 0,1, 0,2, 0,5 and 1 and these CTs are used for meters of class C, B and A according to this document.

NOTE 12 This document does not specify emission requirements, these are specified in EN IEC 62052-11:2021/A11:2022, 9.3.14.

## 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.

EN IEC 62052-11:2021/A11:2022, *Electricity metering equipment – General requirements, tests and test conditions - Part 11: Metering equipment*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN IEC 62052-11:2021/A11:2022 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

NOTE The definitions listed here take precedence over those in EN IEC 62052-11:2021/A11:2022.

### 3.1

#### transitional current

$I_{tr}$

value of the current at, and above which, up to  $I_{max}$  full accuracy requirements of this document apply