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Elmätare – Del 3: Fordringar på elektroniska mätare för aktiv energi av noggrannhetsklass A, B och C

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

Som svensk standard gäller europastandarden EN 50470-3:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50470-3:2022.

Nationellt förord

Tidigare fastställd svensk standard SS-EN 50470-3, utgåva 1:2007 med ändring SS-EN 50470-3, utg 1:2007/A1:2019, gäller ej fr o m 2025-04-11.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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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

This European Standard was approved by CENELEC on 2022-04-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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*