

**Elektrimõõteseadmed vahelduvvoolule.
Vastuvõtukontroll. Osa 11: Vastuvõtukontrolli
üldmeetodid**

**Electricity metering equipment (AC) - Acceptance
inspection - Part 11: General acceptance inspection
methods**

EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

S	E	EVS-EN	62058-11:2010	E	EVS-EN	62058-11:2010
	E	EN	62058-11:2010	E	E	E
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**Electricity metering equipment (a.c.) -
Acceptance inspection -
Part 11: General acceptance inspection methods
(IEC 62058-11:2008, modified)**

Équipement de comptage
de l'électricité (c.a.) -
Contrôle de réception -
Partie 11: Méthodes générales
de contrôle de réception
(CEI 62058-11:2008, modifiée)

Wechselstrom-Elektrizitätszähler -
Annahmeprüfung -
Teil 11: Allgemeine Verfahren
zur Annahmeprüfung
(IEC 62058-11:2008, modifiziert)

This European Standard was approved by CENELEC on 2010-06-01. 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 Central Secretariat 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 Central Secretariat 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

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Foreword

The text of document 13/1430/FDIS, future edition 1 of IEC 62058-11, prepared by IEC TC 13, Electrical energy measurement, tariff- and load control, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by the Technical Committee CENELEC TC 13, Equipment for electrical energy measurement and load control, was submitted to the formal vote.

The combined texts were approved by CENELEC as EN 62058-11 on 2010-06-01.

EN 62058-11:2010, together with EN 62058-21:2010, supersedes EN 60514:1995 and, together with EN 62058-31:2010, EN 62058-11:2010 supersedes EN 61358:1996.

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

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2011-06-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-06-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2004/22/EC. See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62058-11:2008 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

Add the following text at the end of Clause 1:

The process described herein can be used for assessment of conformity with the requirements of the Directive 2004/22/EC of the European Parliament and of the Council on measuring instruments (MID), using:

- Module D, Declaration of conformity to type based on quality assurance of the production process:
 - Final product inspection and testing;
- Module F, Declaration of conformity to type based on product verification:
 - Verification of conformity with the metrological requirements by examination and testing of every instrument; or
 - Statistical verification of conformity with the metrological requirements;
- Module H1, Declaration of conformity based on full quality assurance plus design examination:
 - Final product inspection and testing.

When the process is used within module F, the inspection methods selected shall meet the requirements specified in 5.3 of Annex F of the MID. See 5.5 below.

It is noted, that the requirements of 5.3 of Annex F of the MID do not take into account the switching rules between normal, tightened and reduced inspection. Those switching rules, mandatory with lot-by-lot inspection, when properly applied, ensure adequate protection to the customer against poor quality, and provide incentives to the manufacturer to produce consistently good quality.

5 General

5.5 Selection of sampling schemes and sampling plans

Add the following text after Figure 1:

When acceptance inspection within Module F of the MID is performed, only those sampling schemes and plans may be used, which meet the requirements of 5.3 of Annex F of the MID quoted below:

The statistical procedure shall meet the following requirements:

The statistical control will be based on attributes. The sampling system shall ensure:

- *a level of quality corresponding to a probability of acceptance of 95 %, with a non-conformity of less than 1 %;*
- *a limit quality corresponding to a probability of acceptance of 5 %, with a non-conformity of less than 7 %.*

NOTE It is understood that the correct text should be : ...non-conformity of more than 7 %.

See Clauses 6.Z1, 7.6, 8.4, 8.5 and 10.1.

6 100 % inspection

Add the following subclause after 6.3:

6.Z1 Statistical properties

Statistical properties (OC curves) for 100 % inspection are not available.

7 Lot-by-lot inspection by attributes

7.6 Operating characteristic (OC) curves

Add the following text after Table 10:

In the case for inspecting for non-critical nonconformities, as it can be seen from Table 9, Tabulated values of OC curves for single sampling, AQL = 1,0 plans, the requirements of 5.3 of Annex F of the MID are met when sampling plans with sample size code letter K and L are used.

In case of inspecting for critical nonconformities, accept zero plans are used. Therefore, the requirement of the first bullet point of 5.3 of Annex F of the MID (probability of acceptance of 95 %) is not applicable.

As it can be seen from Table 10, Tabulated values of OC curves for single sampling inspection accept zero sampling plans, the requirement of the second bullet point is met when sampling plans with sample size code letter H, J, K and L are used.

8 Isolated lot inspection

8.4 Procedure A

Add the following text after Table 19 and the Example:

For sampling plans with zero acceptance number, the probability of acceptance depends on the actual lot size and the number of nonconforming units in the lot. See Table 19.

For sampling plans with non-zero acceptance numbers the OC curves are well approximated by the tabulated performance of the same plans in Procedure B. See Table 20.

8.5 Procedure B

Add the following text after Table 22:

As it can be seen from Table 20, the requirements of 5.3 of Annex F of the MID are met when sampling plans with sample size code letter K and L are used.

10 Lot-by-lot inspection by variables

10.1 Application of the method

Add the following text after the Note:

According to 5.3 of Annex F of the MID, inspection by variables is not allowed.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 2859-1 + corr. March	1999 2001	Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	-	-
ISO 2859-2	1985	Sampling procedures for inspection by attributes - Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection	-	-
ISO 2859-3	2005	Sampling procedures for inspection by attributes - Part 3: Skip-lot sampling procedures	-	-
ISO 3534-2	2006	Statistics - Vocabulary and symbols - Part 2: Applied statistics	-	-
ISO 3951-1	2005	Sampling procedures for inspection by variables - Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL	-	-
ISO 3951-2	2006	Sampling procedures for inspection by variables - Part 2: General specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection of independent quality characteristics	-	-
ISO 5479	1997	Statistical interpretation of data - Tests for departure from the normal distribution	-	-

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Annex ZZ (informative)

Coverage of Essential Requirements of EC Directives

This European Standard has been prepared under the mandate M/374 given to CENELEC by the European Commission and within its scope, the standard covers methods for statistical verification of conformity with the metrological requirements in connection the Modules F, D and H1.

EN 62058-11 specifies sampling plans, schemes and systems for lot-by-lot inspection by attributes or variables. In addition, a test procedure for 100 % inspection is specified, that can be used if the lot size is too small for sampling inspection or when sampling inspection has to be discontinued.

Table ZZ.1 provides the relationship between the Essential requirements of the MID and the stipulations of the EN 62058 series.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directives concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

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Table ZZ.1 – Relationship between the Essential requirements of the MID and the stipulations of the relevant standards

MID Annex I		Subject	EN 62058-11	EN 62058-21	EN 62058-31
		NOTE The text in this column is for orientation. For the full text see the MID.			
1		Allowable Errors			
	1.1	Under rated operating conditions and in the absence of disturbance	–	5.6 Accuracy tests, Table Z2 5.7 Verification of the register	5.6 Accuracy tests, Table Z2 5.7 Verification of the register
	1.2	Under rated operating conditions and in the presence of disturbance	–	–	–
	1.3	Climatic, mechanical and EM environment and other influence quantities to be specified by the manufacturer	–	–	–
	1.3.1	Climatic environments, upper and lower temperature limit	–	–	–
	1.3.2	Mechanical environments, vibration and shock	–	–	–
	1.3.3	Electromagnetic environments, unless otherwise laid down in the appropriate instrument-specific annexes.	–	–	–
	1.3.4	Other influence quantities	–	–	–
	1.4	Carrying out the tests	–	–	–
	1.4.1	Basic rules for testing and determination of errors	–	5.6, Accuracy test	5.6, Accuracy test
	1.4.2	Ambient humidity	–	–	–
2		Reproducibility	–	–	–
3		Repeatability	–	4.3	4.3
4		Discrimination and Sensitivity	–	–	–
5		Durability	–	–	–
6		Reliability	–	–	–
7		Suitability		5.3 AC voltage test	5.3 AC voltage test
	7.1	No feature likely to facilitate fraudulent use, possibilities for unintentional misuse minimal	–	–	–
	7.2	Suitable for intended use under practical working conditions, no unreasonable demand of the user	–	–	–

MID Annex I		Subject	EN 62058-11	EN 62058-21	EN 62058-31
	7.3	Errors of a utility measuring instrument at flows or currents outside the controlled range not unduly biased.	—	—	—
	7.4	When the measurand is constant over time, the measuring instrument shall be insensitive to small fluctuations of the value of the measurand, or shall take appropriate action.	N.A.	N.A.	N.A.
	7.5	Robust and materials of construction suitable for the intended use conditions.	—	—	—
	7.6	Designed so as to allow the control of the measuring tasks after the instrument has been placed on the market and put into use. Software that is critical for the metrological characteristics identifiable. Metrological characteristics not inadmissibly influenced by the associated software.	—	—	—
8		Protection against corruption	—	—	—
	8.1	Metrological characteristics not influenced in any inadmissible way by the connection to it of another device, by any feature of the connected device itself or by any remote device that communicates with the measuring instrument.	—	—	—
	8.2	Hardware component critical for metrological characteristics designed so that it can be secured. Security measures to provide evidence of an intervention.	—	—	—
	8.3	Software that is critical for metrological characteristics shall be identified as such and shall be secured. Software identification. Evidence of an intervention available for a reasonable period of time.	—	—	—
	8.4	Measurement data, critical software and metrologically important parameters stored or transmitted adequately protected against accidental or intentional corruption.	—	—	—
	8.5	For utility measuring instruments the display of the total quantity supplied or the displays from which the total quantity supplied can be derived, whole or partial reference to which is the basis for payment, shall not be able to be reset during use.	—	—	—

MID Annex I		Subject	EN 62058-11	EN 62058-21	EN 62058-31
9		Information to be borne by and to accompany the instrument	—	—	—
	9.1	<p>Shall bear the following inscriptions:</p> <ul style="list-style-type: none"> - manufacturers mark or name; - information in respect of accuracy. <p>When applicable:</p> <ul style="list-style-type: none"> - information in respect of the conditions of use; - measuring capacity; - measuring range; - identity marking; - number of the EC-type examination certificate or the EC design examination certificate; - information whether or not additional devices providing metrological results comply with the provisions of this Directive on legal metrological control. 	—	5.2	5.2
	9.2	For too small instruments, marking on packaging and in any accompanying documents	N.A.	N.A.	N.A.
	9.3	<p>Accompanying information on</p> <ul style="list-style-type: none"> - operation <p>and where relevant</p> <ul style="list-style-type: none"> - rated operating conditions; - mechanical and electromagnetic environment classes; - the upper and lower temperature limit, whether condensation is possible or not, open or closed location; - instructions for installation, maintenance, repairs, permissible adjustments; - instructions for correct operation and any special conditions of use; - conditions for compatibility with interfaces, sub-assemblies or measuring instruments. 	—	—	—
	9.4	Utility meters do not require individual instruction manuals.	—	—	—
	9.5	Decimal scale interval	—	—	—
	9.6	Material measure	N.A.	N.A.	N.A.
	9.7	Units of measurement and symbols in accordance with Community legislation	—	—	—
	9.8	Marks and inscriptions clear, non-erasable, unambiguous and non-transferable.	—	—	—

MID Annex I		Subject	EN 62058-11	EN 62058-21	EN 62058-31
10		Indication of result	—	—	—
	10.1	Display or hard copy	N.A.	N.A.	N.A.
	10.2	Indication of result clear and unambiguous. Easy reading.	N.A.	N.A.	N.A.
	10.3	Hard copy easily legible and not erasable	N.A.	N.A.	N.A.
	10.4	Direct sales trading transactions	N.A.	N.A.	N.A.
	10.5	Fitted with a metrologically controlled display accessible without tools to the consumer. The reading of this display is the measurement result that serves as the basis for the price to pay.	5.7 Verification of the register	5.7 Verification of the register	5.7 Verification of the register
11		Further processing of data to conclude the trading transaction	N.A.	N.A.	N.A.
	11.1	Durable record of the measurement result (other than utility meter)	N.A.	N.A.	N.A.
	11.2	Durable proof of the measurement result	N.A.	N.A.	N.A.
12		Conformity evaluation Designed so as to allow ready evaluation of its conformity with the appropriate requirements of this Directive.	—	—	—
Annex MI-003		ACTIVE ELECTRICAL ENERGY METERS			
1		Accuracy	—	—	—
2		Rated operating conditions	—	—	—
3		MPEs		5.6 Accuracy tests, Table Z2 5.7 Verification of the register	5.6 Accuracy tests, Table Z2 5.7 Verification of the register
4		Permissible effect of disturbances	—	—	—
	4.1	General – Special EM environment	—	—	—
	4.2	Effect of disturbances of long duration	—	—	—
		Reversed phase sequence	—	—	—
		Voltage unbalance (only applicable to polyphase meters)	—	—	—
		Harmonic contents in the current circuits	—	—	—
		DC and harmonics in the current circuit	—	—	—
		Fast transient bursts	—	—	—

MID Annex I		Subject	EN 62058-11	EN 62058-21	EN 62058-31
		Magnetic fields	—	—	—
		HF (radiated RF) electromagnetic field;	—	—	—
		Conducted disturbances introduced by radio-frequency fields	—	—	—
		Oscillatory waves immunity	—	—	—
	4.3	Permissible effect of transient electromagnetic phenomena	—	—	—
	4.3.1	Behavior during and immediately after a disturbance Recovery Critical change value	—	—	—
	4.3.2	Critical change value for overcurrent	—	—	—
5		Suitability			
	5.1	Measurement error below the rated operating voltage	—	—	—
	5.2	Display of total energy - sufficient number of digits - not resettable during use	—	—	—
	5.3	Retain energy register reading for 4 months	—	—	—
	5.4	Running with no load	—	5.4 Test of no-load condition	5.4 Test of no-load condition
	5.5	Starting	—	5.5 Starting, Table Z1	5.5 Starting, Table Z1
6		Units	—	—	—
7		Putting into use	—	—	—
		CONFORMITY ASSESSMENT B + F or B + D or H1.	Specifies 100% testing and sampling inspection methods to support modules F, D and H1	—	—

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INTRODUCTION

This part of IEC 62058 describes – based on relevant standards established by ISO TC 69 SC 5 – general acceptance inspection methods of newly manufactured electricity meters, supplied in lots of 50 and above. The method of acceptance of smaller lots should be agreed upon by the manufacturer and the customer.

In this standard, it has been taken into account that modern, automated manufacturing processes operated under quality management systems allow to keep the quality level under tight control.

This standard, together with IEC 62058-21, containing particular requirements for acceptance inspection of electromechanical meters for active energy, and IEC 62058-31, containing particular requirements for acceptance inspection of static meters for active energy, cancels and replaces the following standards:

- IEC 60514: *Acceptance inspection of class 2 alternating-current watt-hour meters* and
- IEC 61358: *Acceptance inspection for direct connected alternating current static watt-hour meters for active energy (classes 1 and 2)*.

Main changes in this standard compared to those earlier standards:

- it is based on the latest standards established by ISO TC 69 SC 5;
- the rules for switching between normal, tightened and reduced inspection have been adopted;
- the procedures for inspection of isolated lots have been adopted;
- the procedures for skip-lot sampling have been adopted;
- for inspection by variables, the “*R*” method has been eliminated and the “*σ*” method has been adopted.

ELECTRICITY METERING EQUIPMENT (AC) – ACCEPTANCE INSPECTION –

Part 11: General acceptance inspection methods

1 Scope

The general acceptance inspection methods specified in this part of IEC 62058 apply to newly manufactured electricity meters produced and supplied in lots of 50 and above.

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.

ISO 2859-1:1999, *Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 2859-1:1999/Cor 1:2001

ISO 2859-2:1985, *Sampling procedures for inspection by attributes – Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection*

ISO 2859-3:2005, *Sampling procedures for inspection by attributes – Part 3: Skip-lot sampling procedures*

ISO 3534-2:2006 Ed. 2 *Statistics – Vocabulary and symbols – Part 2: Applied statistics*

ISO 3951-1:2005 Ed. 1, *Sampling procedures for inspection by variables – Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

ISO 3951-2:2006 Ed. 1, *Sampling procedures for inspection by variables – Part 2: General specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection of independent quality characteristics*

ISO 5479:1997, *Statistical interpretation of data – Tests for departure from the normal distribution*

3 Terms and definitions

For the purposes of this document, the terms and definitions of ISO 3534-2 and the following apply.

NOTE In this standard, the term “meter” means any kind of metering equipment in the Scope of TC 13, i.e. meters for active or reactive energy, time switches, ripple control receivers, etc. The term “customer” is used with the same meaning as “consumer” and the term “manufacturer” is used with the same meaning as the term “supplier”.