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**Power quality measurement in power supply systems -
Part 1: Power Quality Instruments (PQI)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN 62586-1:2014 sisaldab Euroopa standardi EN 62586-1:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 62586-1:2014 consists of the English text of the European standard EN 62586-1:2014.
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English Version

Power quality measurement in power supply systems - Part 1:
Power quality instruments (PQI)
(IEC 62586-1:2013)

Mesure de la qualité de l'alimentation dans les réseaux
d'alimentation - Partie 1: Instruments de mesure de la
qualité de l'alimentation
(CEI 62586-1:2013)

Messung der Spannungsqualität in
Energieversorgungssystemen - Teil 1: Messgeräte für die
Spannungsqualität
(IEC 62586-1:2013)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 85/460/FDIS, future edition 1 of IEC 62586-1, prepared by IEC/TC 85 "Measuring equipment for electrical and electromagnetic quantities" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62586-1:2014.

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) 2014-12-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-01-16

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

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

Endorsement notice

The text of the International Standard IEC 62586-1:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60359	NOTE	Harmonized as EN 60359.
IEC 61010 Series	NOTE	Harmonized as EN 61010 Series (partly modified).

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INTRODUCTION

Electricity as delivered to the network users has several characteristics which are variable and which affect its usefulness to the network user.

Power quality instruments on the market have different characteristics. This standard provides a common system of references in order to facilitate their selection, comparison and evaluation. This standard specifies a classification based on product performances, environment and safety.

It is acknowledged that IEC 61000-4-30 is a basic EMC publication. Detailed guidance on instrument performance, performance verification methods, additional influence quantities and other similar information should, in general, be found in a product standard.

IEC 62586-1 is a product standard that refers to IEC 61000-4-30, IEC 61000-4-7 and IEC 61000-4-15 for measuring methods. IEC 62586-2 specifies functional tests and uncertainty requirements for instruments in the scope of IEC 62586-1.

IEC 62586-1 is therefore complementing basic EMC standards with environmental, safety and performance requirements.

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POWER QUALITY MEASUREMENT IN POWER SUPPLY SYSTEMS –

Part 1: Power quality instruments (PQI)

1 Scope

This part of IEC 62586 specifies product and performance requirements for instruments whose functions include measuring, recording and possibly monitoring power quality parameters in power supply systems, and whose measuring methods (class A or class S) are defined in IEC 61000-4-30.

These requirements are applicable in single, dual- (split phase) and 3-phase a.c. power supply systems at 50 Hz or 60 Hz.

These instruments can be used:

- in the generation, transmission and distribution of electricity, for example inside a power station, substation or a distributed generator connection.
- at the interface point between the installation and the network, e.g. in order to check the compliance of the connection agreement between a network operator and the customer.

NOTE 1 These instruments can also be used for other applications, e.g. inside commercial / industrial installations especially where comparable measurements are needed (i.e. data centers or petrochemical plants).

These instruments are fixed-installed or portable. They are intended to be used indoors and/or outdoors.

Devices such as digital fault recorders, energy/power meters, protection relays or circuit breakers may include power quality functions defined in 61000-4-30 class A or class S. If such devices are specified according to this standard, then this standard fully applies and applies in addition to the relevant product standard. This standard does not replace the relevant product standard.

NOTE 2 It is not the intent of this standard to address user interface or topics unrelated to device measurement performance.

NOTE 3 The standard does not cover post-processing and interpretation of the data, for example with a dedicated software.

2 Normative references

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

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Tests A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Tests B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

- IEC 60068-2-14, *Environmental testing – Part 2-14 Tests – Test N: Change of temperature*
- IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*
- IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*
- IEC 60068-2-52, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*
- IEC 60068-2-57, *Environmental testing – Part 2-57: Tests – Test Ff: Vibration – Time-history and sine-beat method*
- IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*
- IEC 60529, *Degrees of protection provided by enclosures (IP Code)*
- IEC 60654-1, *Industrial-process measurement and control equipment – Operating conditions – Part 1: Climatic conditions*
- IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*
- IEC 60721-3-1, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 1: Storage*
- IEC 60721-3-2, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 2: Transportation*
- IEC 60721-3-3, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 3: Stationary use at weatherprotected locations*
- IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto Amendment 1:2008*
- IEC 61000-4-15:2010, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*
- IEC 61000-4-30:2008, *Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods*
- IEC /TS 61000-6-5, *Electromagnetic compatibility (EMC) – Part 6-5: Generic standards – Immunity for power station and substation environments*
- IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
- IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for testing and measuring circuits*
- IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62586-2, *Power quality measurement in power supply systems – Part 2: Functional tests and uncertainty requirements*

CISPR 22, *Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement*

3 Terms, definitions, abbreviations, notations and symbols

For the purposes of this document, the terms and definitions given in IEC 61000-4-30 as well as the following terms and definitions apply.

3.1 General definitions

3.1.1

power quality instrument

PQI

instrument whose main function is to measure, record and possibly monitor power quality parameters in power supply systems, and whose measuring methods (class A or class S) are defined in IEC 61000-4-30

3.1.2

power quality instrument class A

PQI-A

PQI whose measuring methods comply with class A of IEC 61000-4-30

3.1.3

power quality instrument class S

PQI-S

PQI whose measuring methods comply with class S of IEC 61000-4-30

3.1.4

portable instrument

portable measuring instrument

measuring instrument designed to be easily carried by hand and to be connected and disconnected by the user

[SOURCE: IEC 60050-300:2001, 312-02-18]

3.1.5

fixed installed instrument

fixed installed measuring instrument

measuring instrument designed to be permanently mounted and which is intended to be connected by means of permanently installed connectors

[SOURCE: IEC 60050-300:2001, 312-02-17, modified – “conductors” has been replaced by “connectors”.]

3.1.6

panel mounted instrument

fixed installed instrument intended to be mounted in a cut out of a panel or a chassis

3.1.7

modular instrument fixed on DIN rail

fixed installed instrument intended to be used in switchgear or control gear, fixed on a DIN rail