



EDC 3 (168) DTZS
IEC 62586-1:2017

DRAFT TANZANIA STANDARD

(Draft for comments only)

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

TANZANIA BUREAU OF STANDARDS

0 National Foreword

This draft Tanzania Standard has been prepared by the Electrical Installation Technical Committee, under the supervision of the Electrotechnical Divisional Standards Committee (EDC)

This draft Tanzania Standard is identical to International Standard **IEC 62586-1:2017 Power quality measurement in power supply systems-Part 1: Power quality instruments (PQI)**, which has been prepared by the Electrotechnical commission.

1 Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following: -

- 1) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use "full point" on the baseline as the decimal marker.
- 2) Where the words "International Standard(s)" appear, referring to this standard they should read "Tanzania Standard(s)".



IEC 62586-1

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Edition 2.0 2017-05

INTERNATIONAL STANDARD

BASIC EMC PUBLICATION

Power quality measurement in power supply systems
– Part 1: Power quality instruments (PQI)

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 17.220.20

ISBN 978-2-8322-4358-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**POWER QUALITY MEASUREMENT IN POWER
SUPPLY SYSTEMS –****Part 1: Power quality instruments (PQI)****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62586-1 has been prepared by IEC technical committee 85:
Measuring equipment for electrical and electromagnetic quantities.

This second edition cancels and replaces the first edition published in 2013. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) integration of the new measurement functions of IEC 61000-4-30:2015 (e.g. RVC and current functions);
- b) integration of the new requirements of IEC/TS 61000-6-5:2015, update of definitions of environment G and H, update of applicable EMC performance criteria;
- c) correction of minor mistakes, improvement in specification.

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

FDIS	Report on voting
85/586/FDIS	85/590/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

It has the status of a basic EMC publication in accordance with IEC Guide 107.

A list of all parts of the IEC 62586 series, published under the general title *Power quality measurement in power supply systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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.

INTRODUCTION

Electricity as delivered to the customers has several characteristics that are variable and that affect its usefulness to the customers.

Power quality instruments on the market have different characteristics. This document provides a common system of references in order to facilitate their selection, comparison and evaluation. This document specifies a classification based on product performance, 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 IEC 61000- 4- and 15 for measuring methods. IEC 62586-2 specifies functional tests uncertainty requirements for and instruments in the scope of IEC 62586-1.

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

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

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

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

This document does not address the user interface or topics unrelated to measurement performance of device.

This document does not cover post-processing and interpretation of the data with, for example, dedicated software.

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 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, *Electromagnetic compatibility (EMC) – Part 4-15: Testing and measurement techniques – Flickermeter – Functional and design specifications*

IEC 61000-4-30:2015, *Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods*

IEC 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 32, *Electromagnetic compatibility of multimedia equipment – Emission requirements*

3 Terms, definitions, symbols and abbreviated terms

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

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

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

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”.]

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