



**NSAI**  
Standards

Irish Standard  
I.S. EN 61557-12:2008

Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures -- Part 12: Performance measuring and monitoring devices (PMD) (IEC 61557-12:2007 (EQV))

## I.S. EN 61557-12:2008

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**Electrical safety in low voltage distribution systems  
up to 1 000 V a.c. and 1 500 V d.c. -  
Equipment for testing, measuring or monitoring of protective measures -  
Part 12: Performance measuring and monitoring devices (PMD)  
(IEC 61557-12:2007)**

Sécurité électrique dans les réseaux  
de distribution basse tension  
de 1 000 V c.a. et 1 500 V c.c. -  
Dispositifs de contrôle, de mesure ou  
de surveillance de mesures de protection -  
Partie 12: Dispositifs de mesure et  
de surveillance des performances (PMD)  
(CEI 61557-12:2007)

Elektrische Sicherheit  
in Niederspannungsnetzen  
bis AC 1 000 V und DC 1 500 V -  
Geräte zum Prüfen, Messen oder  
Überwachen von Schutzmaßnahmen -  
Teil 12: Kombinierte Geräte zur Messung  
und Überwachung des Betriebsverhaltens  
(IEC 61557-12:2007)

This European Standard was approved by CENELEC on 2008-04-01. 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, 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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

**I.S. EN 61557-12:2008**

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## **Foreword**

The text of document 85/311/FDIS, future edition 1 of IEC 61557-12, prepared by IEC TC 85, Measuring equipment for electrical and electromagnetic quantities, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61557-12 on 2008-04-01.

This standard is to be used in conjunction with EN 61557-1:2007 (unless otherwise specified).

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) 2009-01-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2011-04-01

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 2004/108/EC. See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

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## **Endorsement notice**

The text of the International Standard IEC 61557-12:2007 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 60044-1	NOTE Harmonized as EN 60044-1:1999 (modified).
IEC 60044-2	NOTE Harmonized as EN 60044-2:1999 (modified).
IEC 60044-7	NOTE Harmonized as EN 60044-7:2000 (not modified).
IEC 60044-8	NOTE Harmonized as EN 60044-8:2002 (not modified).
IEC 60071-1	NOTE Harmonized as EN 60071-1:2006 (not modified).
IEC 60359	NOTE Harmonized as EN 60359:2002 (not modified).
IEC 61000-4-7	NOTE Harmonized as EN 61000-4-7:2002 (not modified).
IEC 61140	NOTE Harmonized as EN 61140:2002 (not modified).
IEC 62052-11	NOTE Harmonized as EN 62052-11:2003 (not modified).

## 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>
IEC 60068-2-1	- <sup>1)</sup>	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	2007 <sup>2)</sup>
IEC 60068-2-2	- <sup>1)</sup>	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007 <sup>2)</sup>
IEC 60068-2-30	- <sup>1)</sup>	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005 <sup>2)</sup>
IEC 60364-6 (mod)	- <sup>1)</sup>	Low voltage electrical installations - Part 6: Verification	HD 60364-6	2007 <sup>2)</sup>
IEC 60529	- <sup>1)</sup>	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 <sup>2)</sup> 1993
IEC 61000-4-5	- <sup>1)</sup>	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006 <sup>2)</sup>
IEC 61000-4-15	- <sup>1)</sup>	Electromagnetic compatibility (EMC) - Part 4-15: Testing and measurement techniques - Flickermeter - Functional and design specifications	EN 61000-4-15	1998 <sup>2)</sup>
IEC 61000-4-30	2003	Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods	EN 61000-4-30	2003
IEC 61010	Series	Safety requirements for electrical equipment for measurement, control, and laboratory use	EN 61010	Series
IEC 61010-1	2001	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1 + corr. June	2001 2002
IEC 61326-1	2005	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN 61326-1	2006
IEC 61557-1	2007	Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 1: General requirements	EN 61557-1	2007

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62053-21	2003	Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)	EN 62053-21	2003
IEC 62053-22	2003	Electricity metering equipment (a.c.) - Particular requirements - Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)	EN 62053-22	2003
IEC 62053-23	2003	Electricity metering equipment (a.c.) - Particular requirements - Part 23: Static meters for reactive energy (classes 2 and 3)	EN 62053-23	2003
IEC 62053-31	1998	Electricity metering equipment (a.c.) - Particular requirements - Part 31: Pulse output devices for electromechanical and electronic meters (two wires only)	EN 62053-31	1998

**Annex ZZ**  
(informative)

**Coverage of Essential Requirements of EC Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Annex I of the EC Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive 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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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## **ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V a.c. AND 1 500 V d.c. – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES –**

### **Part 12: Performance measuring and monitoring devices (PMD)**

#### **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 61557-12 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities.

The text of this standard is based on the following documents:

FDIS	Report on voting
85/311/FDIS	85/312/RVD

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

**I.S. EN 61557-12:2008**

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

This standard is to be used in conjunction with IEC 61557-1 (unless otherwise specified).

A list of all parts of the IEC 61557 series, published under the general title *Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

As a complement to protection measures, it becomes more and more necessary to measure different electrical parameters, in order to monitor the required performances in energy distribution systems due to:

- installation standards evolutions, for instance over current detection is now a new requirement for the neutral conductor due to harmonic content;
- technological evolutions (electronic loads, electronic measuring methods, etc.);
- end-users needs (cost saving, compliance with aspects of building regulations, etc..);
- safety and continuity of service;
- sustainable development requirements where energy measurement for instance is recognised as an essential element of energy management, part of the overall drive to reduce carbon emissions and to improve the commercial efficiency of manufacturing, commercial organisations and public services.

The devices on the current market have different characteristics, which need a common system of references. Therefore there is a need for a new standard in order to facilitate the choices of the end-users in terms of performance, safety, interpretation of the indications, etc. This standard provides a basis by which such devices can be specified and described, and their performance evaluated.

**ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS  
UP TO 1 000 V a.c. AND 1 500 V d.c. –  
EQUIPMENT FOR TESTING, MEASURING OR MONITORING  
OF PROTECTIVE MEASURES –**

**Part 12: Performance measuring and monitoring devices (PMD)**

**1 Scope**

This part of IEC 61557 specifies requirements for combined performance measuring and monitoring devices that measure and monitor the electrical parameters within electrical distribution systems. These requirements also define the performance, in single and three-phase a.c. or d.c. systems having rated voltages up to 1 000 V a.c. or up to 1 500 V d.c.

These devices are fixed installed or portable. They are intended to be used indoors and/or outdoors. This standard is not applicable for:

- electricity metering equipment that complies with IEC 62053-21, IEC 62053-22 and IEC 62053-23. Nevertheless, uncertainties defined in this standard for active and reactive energy measurement are derived from those defined in the IEC 62053 standards series.
- simple remote relays or simple monitoring relays.

This standard is intended to be used in conjunction with IEC 61557-1 (unless otherwise specified), which specifies the general requirements for measuring and monitoring equipment, as required in IEC 60364-6.

The standard does not include the measurement and monitoring of electrical parameters defined in Parts 2 to 9 of IEC 61557 or in IEC 62020.

Combined performance measuring and monitoring devices (PMD), as defined in this standard, give additional safety information, which aids the verification of the installation and enhances the performance of the distribution systems. For instance, those devices help to check if the level of harmonics is still compliant with the wiring systems as required in IEC 60364-5-52.

The combined performance measuring and monitoring devices (PMD) for electrical parameters described in this standard are used for general industrial and commercial applications. A PMD-A is a specific PMD complying with requirements of IEC 61000-4-30 class A, which may be used in "power quality assessment" applications.

NOTE 1 Generally such types of devices are used in the following applications or for the following general needs:

- energy management inside the installation;
- monitoring and/or measurement of electrical parameters that may be required or usual;
- measurement and/or monitoring of the quality of energy.

NOTE 2 A measuring and monitoring device of electrical parameters usually consists of several functional modules. All or some of the functional modules are combined in one device. Examples of functional modules are mentioned below:

- measurement and indication of several electrical parameters simultaneously;

- energy measurement and/or monitoring, and also sometimes compliance with aspects of building regulations;
- alarms functions;
- power quality (harmonics, over/undervoltages, voltage dips and swells, etc).

## 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.

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

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

IEC 60068-2-30, *Environmental testing – Part 2-30 – Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60364-6, *Low-voltage electrical installations – Part 6: Verification*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-15, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 15: Flickermeter – Functional and design specifications*

IEC 61000-4-30:2003, *Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods*

IEC 61010 (all parts), *Safety requirements for electrical equipment for measurement, control, and laboratory use*

IEC 61010-1:2001, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61326-1:2005, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 61557-1:2007, *Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 1: General requirements*

IEC 62053-21:2003, *Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)*

IEC 62053-22:2003, *Electricity metering equipment (a.c.) – Particular Requirements – Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)*

IEC 62053-23:2003, *Electricity metering equipment (a.c.) – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*

IEC 62053-31:1998, *Electricity metering equipment (a.c.) – Particular requirements – Part 31: Pulse output devices for electromechanical and electronic meters (two wires only)*

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