

**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 14: Equipment for testing the safety of electrical equipment of machinery (IEC 61557-14:2013)**

## EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN 61557-14:2013 sisaldab Euroopa standardi EN 61557-14:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 61557-14:2013 consists of the English text of the European standard EN 61557-14:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 28.06.2013.	Date of Availability of the European standard is 28.06.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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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 14: Equipment for testing the safety of electrical equipment of  
machinery  
(IEC 61557-14:2013)**

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 14: Dispositifs de contrôle de la  
sécurité des appareils électriques sur  
machines  
(CEI 61557-14:2013)

Elektrische Sicherheit in  
Niederspannungsnetzen  
bis AC 1 000 V und DC 1 500 V - Geräte  
zum Prüfen, Messen oder Überwachen  
von Schutzmaßnahmen -  
Teil 14: Geräte zum Prüfen der Sicherheit  
der elektrischen Ausrüstung von  
Maschinen  
(IEC 61557-14:2013)

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 85/446/FDIS, future edition 1 of IEC 61557-14, 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 61557-14:2013.

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) 2014-02-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-05-16

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

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

## Endorsement notice

The text of the International Standard IEC 61557-14:2013 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 61557-5	NOTE	Harmonised as EN 61557-5.
IEC 61557-7	NOTE	Harmonised as EN 61557-7.
IEC 61557-8	NOTE	Harmonised as EN 61557-8.
IEC 61557-9	NOTE	Harmonised as EN 61557-9.
IEC 61557-11	NOTE	Harmonised as EN 61557-11.
IEC 61557-12	NOTE	Harmonised as EN 61557-12.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

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 60204-1	-	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	EN 60204-1	-
IEC 60529	-	Degrees of protection provided by enclosures - (IP Code)	-	-
IEC 61000-4-8	-	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	-
IEC 61010-1 + corr. May	2010 2011	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements	EN 61010-1	2010
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	EN 61010-2-030	-
IEC 61010-2-032	-	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-032: Particular requirements for hand- held and hand-manipulated current sensors for electrical test and measurement	EN 61010-2-032	-
IEC 61010-031	-	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test	EN 61010-031	-
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
IEC 61557-2	-	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 2: Insulation resistance	EN 61557-2	-
IEC 61557-3	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 3: Loop impedance	EN 61557-3	2007

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61557-4	-	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 4: Resistance of earth connection and equipotential bonding	EN 61557-4	-
IEC 61557-6	-	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 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems	EN 61557-6	-
IEC 61557-10	-	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 10: Combined measuring equipment for testing, measuring or monitoring of protective measures	EN 61557-10	-
IEC 61557-13	2011	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 13: Hand-held and hand-manipulated current clamps and sensors for measurement of leakage currents in electrical distribution systems	EN 61557-13	2011

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## INTRODUCTION

IEC 61010 and the existing parts of series IEC 61557 do not cover all safety aspects of testing electrical equipment of machinery. This part of IEC 61557 provides additional protection against electric shock for the testing person and bystanders during high-voltage-tests and in case of unintended use of the test equipment. It defines performance requirements for each measuring and testing function to ensure comparable results.

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

## **Part 14: Equipment for testing the safety of electrical equipment of machinery**

### **1 Scope**

This part of IEC 61557 defines special requirements for test and measurement equipment used to determine the electrical safety of electrical equipment of machinery according to IEC 60204-1.

### **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 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

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

IEC 61000-4-8, *Electromagnetic compatibility – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61010-031, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test*

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 61010-2-032, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-032: Particular requirements for hand-held and hand-manipulated current sensors for electrical test and measurement*

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*

IEC 61557-2, *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 2: Insulation resistance*

IEC 61557-3:2007, *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 3: Loop impedance*

IEC 61557-4, *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 4: Resistance of earth connection and equipotential bonding*

IEC 61557-6, *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 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems*

IEC 61557-10, *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 10: Combined measuring equipment for testing, measuring or monitoring of protective measures*

IEC 61557-13:2001, *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 13: Hand-held and hand-manipulated current clamps and sensors for measurement of leakage currents in electrical distribution systems*

### 3 Terms and definitions

For the purpose of this document, the terms and definitions given in IEC 61557-1, IEC 61557-2, IEC 61557-3, IEC 61557-4, IEC 61557-6, IEC 61557-10 and IEC 61557-13 apply.

### 4 Requirements

#### 4.1 General requirements

The following requirements as well as those given in IEC 61557-1 shall apply with the exception of the influence quantities  $E_4$  (variation due to interference voltages) and  $E_5$  (variation due to earth electrode resistance). In addition, the applicable requirements of IEC 61557-13 shall apply.

#### 4.2 Measuring quantities

##### 4.2.1 General

The measuring equipment shall be capable of measuring at least the following measuring quantities:

- resistance of protective bonding;
- loop impedance;
- effectiveness of residual current protective devices (RCDs);
- insulation resistance.

The combination with the following measuring functions is possible:

- dielectric strength;
- residual voltage;
- leakage current / protective conductor current.

The combination with further measuring functions is possible, provided that the measuring functions listed above will not be influenced.