

### SLOVENSKI STANDARD SIST EN 61557-9:2009

01-junij-2009

BUXca Yý U. SIST EN 61557-9:2000

9`Y\_lf] bUj Ufbcghij 'b]n\_cbUdYhcghb]\ 'fUnXY]`b]\ 'g]ghYa ]\ ']na Yb] bY'bUdYhcgh]`Xc %\_J ']b'Ybcga YfbY'bUdYhcgh]`Xc '%\bar{a} '\_J'!CdfYa UnUdfYg\_i ýUb^Yza Yf^Yb^Y'U]
bUXncfcj Ub^Y'nUý ]lb]\ 'i \_fYdcj '!- "XY. 'CdfYa UnUi [ chUj '^Ub^Y'a YghU]nc`UW]^g\_Y
c\_j UfY'j 'g]ghYa ]\ '\left\righ

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 9: Equipment for insulation fault location in H systems

### (standards.iteh.ai)

Elektrische Sicherheit in Niederspannungsnetzen bis AC 1000 V und DC 1500 V - Geräte zum Prüfen, Messen oder Überwachen von Schutzmaßnahmen – Teil 9: Einrichtungen zur Isolationsfehlersuche in IT-Systemen

Sécurité électrique dans les réseaux de distribution basse tension de 1 000 V c.a. et 1 500 V cc - Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection -- Partie 9 : Dispositifs de focalisation de défauts d'isolement pour réseaux IT

Ta slovenski standard je istoveten z: EN 61557-9:2009

#### ICS:

17.220.20	T^¦b/}b/Á^ ^\dã}ã@Ás {æ*}^c}ã@Ás^ ãāj	Measurement of electrical and magnetic quantities
29.080.01	Ò ^\dã}æÁs[ æ&abæÁ;æ •] [z}[	Electrical insulation in general
29.240.01	U{ ¦^0bæÁæÁ,¦^}[•Á5; åã•dãa`&ã4[Á^ ^\dã}^Á^}^!*ã6 }æÁ]∥[z}[	Power transmission and distribution networks in general

SIST EN 61557-9:2009

en,fr

SIST EN 61557-9:2009

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61557-9:2009

 $https://standards.iteh.ai/catalog/standards/sist/1d\overline{3}55b4a-3628-40a2-8b7f-6f5cf6ee1ab5/sist-en-61557-9-2009$ 

**EUROPEAN STANDARD** 

EN 61557-9

NORME EUROPÉENNE EUROPÄISCHE NORM

March 2009

ICS 25.040.40

Supersedes EN 61557-9:1999

English version

# 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 9: Equipment for insulation fault location in IT systems (IEC 61557-9:2009)

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 9: Dispositifs de localisation de défauts d'isolement pour réseaux IT (CEI 61557-9:2009)

Elektrische Sicherheit
in Niederspannungsnetzen
bis AC 1 000 V und DC 1 500 V esure ou
de protection sation
réseaux IT

Elektrische Sicherheit
in Niederspannungsnetzen
bis AC 1 000 V und DC 1 500 V Geräte zum Prüfen, Messen oder
Überwachen von Schutzmaßnahmen Teil 9: Einrichtungen zur
Isolationsfehlersuche in IT-Systemen
(standards.ite (IEC 61557-9:2009)

<u>SIST EN 61557-9:2009</u> https://standards.iteh.ai/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-6f5cf6ee1ab5/sist-en-61557-9-2009

This European Standard was approved by CENELEC on 2009-02-01. 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: avenue Marnix 17, B - 1000 Brussels

#### Foreword

The text of document 85/337/FDIS, future edition 2 of IEC 61557-9, 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 61557-9 on 2009-02-01.

This European Standard supersedes EN 61557-9:1999.

EN 61557-9:2009 includes the following significant technical changes with respect to EN 61557-9:1999:

- scope complemented;
- normative references complemented;
- terms and definitions of Clause 3 complemented;
- revision of requirements;
- revision of marking and operating instructions;
- revision of Clause 6 "Tests";
- revision of Table 1;
- addition of Annex A;
- addition of Annex B; iTeh STANDARD PREVIEW
- addition of Annex C.

(standards.iteh.ai)

This standard is to be used in conjunction with EN 61557-1:2007.

SIST EN 61557-9:2009

The following dates were fixed: https://standards.iteh.ai/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-

 latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement

(dop) 2009-11-01

 latest date by which the national standards conflicting with the EN have to be withdrawn

2012-02-01 (dow)

Annex ZA has been added by CENELEC.

#### **Endorsement notice**

The text of the International Standard IEC 61557-9:2009 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 60364-5-53	NOTE	Clause 534 (in IEC/A1:2002) harmonized as HD 60364-5-534:2008 (modified).
IEC 60947-5-1	NOTE	Harmonized as EN 60947-5-1:2004 (not modified).
IEC 60947-5-4	NOTE	Harmonized as EN 60947-5-4:2003 (not modified).
IEC 61810-2	NOTE	Harmonized as EN 61810-2:2005 (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>	EN/HD	<u>Year</u>
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41 + corr. July	2007 2007
IEC 60664-1	_1)	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007 <sup>2)</sup>
IEC 60664-3	_1)	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2003 <sup>2)</sup>
IEC 60721-3-1	_1) 1 1	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities - Section 1: Storage 61557-9:2009	EN 60721-3-1	1997 <sup>2)</sup>
IEC 60721-3-2	https://sta	Classification of environmental conditions -400 Part 3. Classification of groups of 0009 environmental parameters and their severities - Section 2: Transportation	<sup>2</sup> EN 60721-3-2	1997 <sup>2)</sup>
IEC 60721-3-3	_1)	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations	EN 60721-3-3	1995 <sup>2)</sup>
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 <sup>2)</sup> 2002
IEC 61326-2-4	_1)	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-4: Particular requirements - Test configurations, operational conditions and performance criteria for insulation monitoring devices according to IEC 61557-8 and for equipment for insulation fault location according to IEC 61557-9	EN 61326-2-4	2006 <sup>2)</sup>

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

-

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

EN 61557-9:2009

- 4 -

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
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 61557-8 + corr. May	2007 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 8: Insulation monitoring devices for IT systems	EN 61557-8	2007

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61557-9:2009

https://standards.iteh.ai/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-6f5cf6ee1ab5/sist-en-61557-9-2009



IEC 61557-9

Edition 2.0 2009-01

### INTERNATIONAL STANDARD

### NORME INTERNATIONALE

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 9: Equipment for insulation fault location in IT systems

https://standards.iteh.ai/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-

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 9: Dispositifs de localisation de défauts d'isolement pour réseaux IT

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX

S

ICS 25.040.40

ISBN 2-8318-1023-7

### CONTENTS

FO	REWO	RD		4
1	Scop	e		6
2	Norm	ative re	ferences	6
3	Term	s and d	efinitions	7
4	Requ	irement	S	8
	4.1	Equipn	nent for insulation fault location	8
	4.2		nse sensitivity	
	4.3	•	g device	
	4.4	Locatir	ig current $I_{\mathtt{I}}$	8
	4.5	Locatir	ig voltage $U_{ m I}$	9
	4.6	Indicat	ion of the insulation value	9
	4.7	PE con	nection	9
	4.8	Cleara	nces and creepage distances	9
	4.9	Electro	magnetic compatibility (EMC)	9
	4.10	Additio	nal requirements	9
5	Mark	ing and	operating instructions	10
	5.1	Markin	g	10
	5.2	Operat	ing instructions T.A.N.D.A.R.DP.R.E.V.III.W	11
6	Tests	3		11
	6.1	Type te	est (standards.iteh.ai)	12
		6.1.1	Response sensitivity of the insulation fault location system	12
		6.1.2	Response sensitivity of the insulation fault location system	12
		6.1.3	Locating voltage/Ubee1ab5/sist-en-61557-9-2009	13
		6.1.4	Warning device	13
		6.1.5	Equipment for indication of the insulation value	13
		6.1.6	Locating current injector	13
		6.1.7	Dielectric test	
		6.1.8	Electromagnetic compatibility (EMC)	
		6.1.9	Loss of locating current sensor connection	
			Additional requirements	
			Marking and operating instructions	
			Record of the type test	
	6.2		e tests	
		6.2.1	General	
		6.2.2	Response sensitivity	
		6.2.3	Warning device	
		6.2.4	Self-test function	
		6.2.5 6.2.6	Dielectric test	
۸nr	20 V A		Marking and operating instructionsive) Equipment for insulation fault location in medical locations	
		•		
		•	ive) Portable equipment for insulation fault location	18
Anr	nex C	(informa	ative) Example of an insulation fault location system and explanation of	20
			stream leakage capacitances	
RID	ııogra	pny		23
	_			
Fig	ure C.	1 – Exa	mple of an insulation fault location system	21

61557-9	© IEC:2009
---------	------------

2	

Figure C.2 – Explanation of upstream/downstream leakage capacitance	22
Table 1 – Requirements for Insulation Fault Location Systems (IFL)	10
Table A.1 – Additional requirements applicable to equipment for insulation fault location in medical locations	. 17
Table A.2 – Emission test for equipment for insulation fault location in medical locations	.17

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61557-9:2009

https://standards.iteh.ai/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-6f5cf6ee1ab5/sist-en-61557-9-2009

#### 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 9: Equipment for insulation fault location in IT systems

### **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.
- The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international
  consensus of opinion on the relevant subjects since each technical committee has representation from all
  interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61557-9 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 1999. It is a technical revision.

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

- a) scope complemented;
- b) normative references complemented;
- c) terms and definitions of Clause 3 complemented;
- d) revision of requirements;
- e) revision of marking and operating instructions;
- f) revision of Clause 6 "Tests";

61557-9 © IEC:2009

- 5 -

- g) revision of Table 1;
- h) addition of Annex A;
- i) addition of Annex B;
- j) addition of Annex C.

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

FDIS	Report on voting	
85/337/FDIS	85/341/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.

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

This part is to be used in conjunction with IEC 61557-1:2007.

A list of all parts of the IEC 61557 series, published under the general title *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,* 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 <a href="http://webstore.iec.ch">http://webstore.iec.ch</a> in the data related to the specific publication. At this date, the publication will be

reconfirmed;

(standards.iteh.ai)

withdrawn;

SIST EN 61557-9:2009

• replaced by a revised edition elori/catalog/standards/sist/1d355b4a-3628-40a2-8b7f-

amended.

6f5cf6ee1ab5/sist-en-61557-9-2009