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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS/IEC 61557-1 (2007): Electrical Safety in Low Voltage Distribution Systems up to 1000 V ac and 1500 V dc - Equipment for Testing, Measuring or Monitoring of Protective Measures, Part 1: General Requirements [ETD 12: Measuring Equipment for Basic Electrical Quantities]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

1 000 वोल्ट ए सी और 1 500 वोल्ट डी सी तक के
अल्प वोल्टता वितरण तंत्रों में विद्युत सुरक्षा — संरक्षी मापों
को परीक्षण करने, माप करने या मॉनीटर करने का उपस्कर
भाग 1 सामान्य अपेक्षाएँ

Indian Standard

**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 1 GENERAL REQUIREMENTS

ICS 17.220.20; 29.080.01; 29.240.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (Part 1) which is identical with 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' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Measuring Equipment for Basic Electrical Quantities Sectional Committee and approval of the Electrotechnical Division Council.

The text of IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their respective places are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 60038 : 1983 ¹⁾ IEC standard voltages Amendment 1 : 1994 Amendment 2 : 1997	IS 12360 : 1988 Voltage bands for electrical installations including preferred voltages and frequency	Technically Equivalent
IEC 60529 : 2001 Degrees of protection provided by enclosures (IP code)	IS 12063 : 1987 Classification of degrees of protection provided by enclosures of electrical equipment	do
IEC 60664-1 Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests	IS 15382 (Part 1) : 2003 Insulation coordination for equipment within low- voltage systems: Part 1 Principles, requirements and tests	Identical to IEC 60664-1 : 2002
IEC 61010-1 : 2001 Safety requirements for electrical equipment for measurement, control and laboratory use — Part 1: General requirements	IS 9249 (Part 1) : 1979 Safety requirements for indicating and recording electrical measuring instruments and their accessories: Part 1 Common safety requirements for instruments	Technically Equivalent
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	IS/IEC 61557-2 : 2007 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 2 Insulation resistance	Identical to IEC 61557-2 : 2007

¹⁾ These exist a consolidated version (6.2), which includes IEC 60038 : 1983 and its Amendments No. 1 (1994) and 2 (1997).

Indian Standard

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 1 GENERAL REQUIREMENTS

1 Scope

This part of IEC 61557 specifies the general requirements for measuring and monitoring equipment for testing the electrical safety in low voltage distribution systems with nominal voltages up to 1 000 V a.c. and 1 500 V d.c.

When measuring equipment or measuring installations involve measurement tasks of various measuring equipment covered by this series of standards, then the part of this series of standards relevant to each of the measurement tasks is applicable.

NOTE The term "measuring equipment" will hereafter be used to designate "testing, measuring and monitoring equipment".

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 60038:1983 ¹⁾, *IEC standard voltages*

Amendment 1: 1994

Amendment 2: 1997

IEC 60364-6:2006, *Electrical installations of buildings – Part 6: Verification*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests*

IEC 60529: 2001, *Degrees of protection provided by enclosures (IP code)*

IEC 61010-1:2001, *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: Special requirements for testing and measuring circuits* ²⁾

IEC 61326-2-2:2005, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems*

¹⁾ There exists a consolidated edition (6.2), which includes IEC 60038:1983 and its Amendments 1 (1994) and 2 (1997).

²⁾ To be published.

IS/IEC 61557-1 : 2007

IEC 61326-2-4:2006, *Electrical equipment for measurement, control and laboratory use, - EMC requirements - Part 2: 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*

IEC 61557-2, *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 2: Insulation resistance*

IEC 61557-3, *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 3: Loop impedance*

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

IEC 61557-5, *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 5: Resistance to earth*

IEC 61557-6, *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 6: Residual current devices (RCD) in TT and TN systems*

IEC 61557-7, *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 7: Phase sequence*

IEC 61557-8, *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 8: Insulation monitoring devices for IT systems*

IEC 61557-9, *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 9: Equipment for insulation fault location in IT systems*

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

3 Terms and definitions

For the purposes of this document, the following definitions apply.

3.1

nominal voltage of the distribution system (U_n)

voltage by which a distribution system or equipment is designated and to which certain operating characteristics are referred

[IEC 60038, Clause 1, modified]

3.2

operating voltage in a system

the value of the voltage under normal conditions, at a given instant and a given point of the system

[IEV 601-01-22, modified]

3.3

voltage against earth

U_o

a) in distribution systems with an earthed neutral point, the voltage between a phase conductor and the earthed neutral point;

b) in all other distribution systems, the voltage present between the remaining phase conductors and earth when one of the phase conductors is shorted to earth

3.4

fault voltage

U_f

voltage appearing under fault conditions between exposed conductive parts (and/or extraneous conductive parts) and earth

3.5

(effective) touch voltage

U_t

voltage between conductive parts when touched simultaneously by a person or an animal

[IEV 826-11-05]

3.6

conventional touch voltage limit

U_L

maximum value of the touch voltage which is permitted to be maintained indefinitely in specified conditions of external influences and is usually equal to 50 V a.c., r.m.s. or 120 V ripple free d.c.

[IEV 826-02-04, modified]

3.7

rated range of voltages

voltage range for which the measuring and monitoring equipment is intended to be used and for which it has been designed

3.8

rated supply voltage

U_s

voltage at a point where the measuring equipment does or can accept electric energy as a supply

3.9

output voltage

U_a

voltage across the measuring equipment terminals where this equipment does or can output electric energy

3.10

open-circuit voltage

U_q

voltage present across unloaded terminals on the measuring equipment

3.11

rated voltage of measuring equipment

U_{ME}

voltage for which the measuring equipment is intended to be used and the value of which is marked on the equipment

3.12

extraneous voltage

voltage to which the measuring equipment can be subjected by external influences. This is not required for the operation of the measuring equipment, but can interfere with its operation

3.13

rated current

I_N

current of the measuring equipment under rated conditions

3.14

short-circuit current

I_k

current flowing across the short-circuited terminals of the measuring equipment

3.15

rated frequency

f_N

frequency for which the measuring equipment is intended to be used and designed

3.16

earth

the conductive mass of the earth whose electric potential at any point is conventionally taken as equal to zero

[IEV 826-04-01]

3.17

earth electrode

a conductive part or group of conductive parts in intimate contact with and providing an electrical connection with earth

[IEV 826-04-02]

3.18

total earthing resistance

R_A

the resistance between the main earthing terminal and the earth

[IEV 826-04-03]

3.19

percentage fiducial uncertainty

(absolute) uncertainty of measuring equipment expressed as a percentage of the fiducial value (see 3.26)

3.20

intrinsic uncertainty

the uncertainty of a measuring instrument or supply instrument when used under reference conditions

[IEC 60359, definition 3.2.10]

NOTE The uncertainty caused by friction is part of the intrinsic uncertainty.

3.21

operating instrumental uncertainty

instrumental uncertainty under the rated operating conditions

[IEC 60359, definition 3.2.11]

NOTE The operating uncertainty will have an extreme value (without regard to sign) at some combination of values of influence quantities within their operating ranges.

3.22

percentage operating uncertainty

operating uncertainty of measuring equipment expressed as a percentage of the fiducial value

3.23

performance characteristic

one of the quantities (described by values, tolerances, ranges) assigned to an equipment in order to define its performance

NOTE Depending on its application, one and the same quantity may be referred to in this standard as a "performance characteristic" and as a "measured or supplied quantity" and also may act as an "influence quantity".

In addition, the term "performance characteristic" includes quotients of quantities, such as voltage per unit of length.

3.24

influence quantity

quantity which is not the subject of the measurement and whose change affects the relationship between the indication and the result of the measurement

[IEC 60359, definition 3.1.14]

NOTE An influence quantity may be external or internal with reference to the equipment. When the value of one of the influence quantities changes within its measuring range, it may affect the uncertainty due to another. The measured quantity or a parameter of it may itself act as an influence quantity. For example, for a voltmeter the value of the measured voltage may produce an additional uncertainty due to non-linearity or its frequency may also cause an additional uncertainty.

3.25

variation (due to an influence quantity)

difference between the indicated values for the same value of the measurand of an indicating instrument, or the values of a material measure, when an influence quantity assumes, successively, two different values

[IEC 60359, definition 3.3.5]

3.26

fiducial value

clearly specified value to which reference is made in order to define the fiducial uncertainty

NOTE This value can be, for example, the upper limit of the measuring range, the scalelength or any other value which is clearly stated

[IEV 311-01-16, modified]

3.27

reference conditions

appropriate set of specified values and/or ranges of values of influence quantities under which the smallest permissible uncertainties of a measuring instrument are specified

[IEC 60359, definition 3.3.10]

3.28

specified operating range

range of values of a single influence quantity which forms a part of the rated operating conditions (see 3.31)

3.29

effect of the supply voltage

effect influencing the functioning of measuring equipment, and consequently the measured value produced by it

3.30

effects of the distribution system voltage

effect influencing the operation and, consequently, the measured value produced by it

3.31

rated operating conditions

set of conditions that must be fulfilled during the measurement in order that a calibration diagram may be valid

[IEC 60359, definition 3.3.13]

3.32

rated measuring voltage

U_M

voltage present at the measuring terminals during the measurement

4 Requirements

Measuring equipment, when used for a designated purpose, shall not endanger persons, livestock or property. Furthermore, measuring equipment with additional functions not forming part of the application of the IEC 61557 series, shall also not endanger persons, livestock or property.

Measuring equipment shall comply with IEC 61010-1 provided nothing to the contrary is specified hereafter.

If the measuring equipment indicates the voltage conditions at its measuring terminals, it must also indicate if the system voltage exists and if the live conductor is exchanged with the protective conductor.

4.1 Operating uncertainty (B), percentage operating uncertainty (B [%])

The operating uncertainty shall be calculated by means of the following equation:

$$B = \pm(|A| + 1,15 \times \sqrt{\sum_{i=1}^N E_i^2}) \quad (1)$$

where

A is the intrinsic uncertainty;

E_i is the variation;

i is the consecutive number of the variations;

N is the number of influencing factors.

The percentage operating uncertainty shall be calculated by means of the following equation:

$$B[\%] = \pm \frac{B}{\text{fiducial value}} \times 100 \% \quad (2)$$

The influencing variations used for calculating the operating uncertainty are denoted as follows:

- variation due to changing the position E_1
- variation due to changing the supply voltage E_2
- variation due to changing the temperature E_3
- variation due to interference voltages E_4
- variation due to earth electrode resistance E_5
- variation due to changing the phase angle of impedance of circuit under test E_6
- variation due to changing the system frequency E_7
- variation due to changing the system voltage E_8
- variation due to system harmonics E_9
- variation due to system d.c. quantities E_{10}

The permissible percentage operating uncertainties are stated in the other parts of the IEC 61557 series.

NOTE Only one of the influence quantities is varied when calculating the operating uncertainty, whilst the remaining influence quantities are kept under reference conditions. The larger of the respective values of the variation (variation positive and negative) is inserted in the equation for the calculation of the operating uncertainty.

Not all influence quantities are relevant to measuring equipment covered by Parts 2 to 8 of IEC 61557.

Variations measured during type tests can be used in certain cases for calculating the operating uncertainty in routine tests. Details for this are specified in the relevant parts of the IEC 61557 series.

4.2 Rated operating conditions

The stated operating uncertainties shall apply under the following rated operating conditions:

- temperature range from 0 °C to 35 °C;
- a position of $\pm 90^\circ$ from the reference position for portable measuring equipment;
- 85 % to 110 % of the nominal supply voltage for supply from the distribution systems (if applicable). The values in IEC 60038 shall be used for a supply from the distribution system;
- the charge condition in accordance with 4.3 shall apply to the battery or batteries/accumulators for measuring equipment with a supply from batteries/accumulators;
- the range of revolutions per minute stated by the manufacturer for measuring equipment with a supply from a hand-driven generator;
- frequency of the supply voltage ± 1 % (if applicable).

NOTE Additional rated operating conditions are stated in other parts of the IEC 61557 series.

4.3 Battery check facility

Measuring equipment with power supplied from dry or rechargeable cells shall check that the state of charge of these batteries will permit measurement with specification. This may be done automatically as part of the measurement cycle or as a separate function. The battery should be loaded at least as heavily as during a measurement.

4.4 Terminals

The terminals shall be designed so that the probe assembly can be connected to the measuring equipment reliably and accidental touching of any live parts is impossible.

In this instance, the protective conductor shall be treated as a live part, with the exception of measuring devices covered in IEC 61557-8.

4.5 Class of protection

Measuring equipment shall be designed with double or reinforced insulation (protection class II), with the exception of measuring devices covered in IEC 61557-8 and IEC 61557-9.

4.6 Class of pollution

Measuring equipment shall be designed for at least pollution class 2 in accordance with IEC 61010-1.

4.7 Overvoltage category

Measuring equipment covered by IEC 61557-8 and IEC 61557-9 shall be designed for at least overvoltage category III according to IEC 60664-1.

4.8 Measuring category

Measuring equipment covered by IEC 61557-3, IEC 61557-5, IEC 61557-6, IEC 61557-7 and IEC 61557-10 shall be designed for at least measuring category III according IEC 61010-2-030. Measuring equipment covered by IEC 61557-2, IEC 61557-4, IEC 61557-5 (battery powered) and IEC 61557-4 shall be designed for at least measuring category II.

4.9 Electromagnetic compatibility

4.9.1 Measuring equipment covered by IEC 61557-2, IEC 61557-3, IEC 61557-4, IEC 61557-5, IEC 61557-6, IEC 61557-7 and IEC 61557-10 shall be designed according to IEC 61326-2-2.

4.9.2 Measuring equipment covered by IEC 61557-8 and IEC 61557-9 shall be designed according to IEC 61326-2-4.

4.10 Vibration test

In addition to the mechanical resistance tests in accordance with IEC 61010-1, measuring equipment shall successfully pass the following vibration conditions (*type test*):

- direction: three mutually perpendicular axes;
- amplitude: 1 mm;
- frequency: 25 Hz;
- duration: 20 min.

5 Marking and operating instructions

Marking and operating instructions shall comply with IEC 61010-1 unless otherwise specified in other parts of IEC 61557.

5.1 Marking

The measuring equipment shall carry the following marking which shall be clearly readable and indelible.

5.1.1 Type of equipment.

5.1.2 Units of the measured quantity.

5.1.3 Ranges of measurement.


5.1.4 Type and current rating of the fuse in the case of exchangeable fuses.

5.1.5 Type of battery/accumulator and polarity of connection in the battery compartment.

5.1.6 Nominal voltage of the distribution system and the symbol for double insulation in accordance with IEC 61010-1 for measuring equipment with distribution system power supply.

5.1.7 Manufacturer's name or registered trade mark.

5.1.8 Model number, name or other means to identify the equipment (inside or outside).

5.1.9 Reference to the operating instructions with the symbol  in accordance with IEC 61010-1.

5.2 Operating instructions

The operating uncertainty, the intrinsic uncertainty and the variations E_1 to E_{10} shall be provided in the operating instructions (with the exception of measuring devices covered by IEC 61557-8 and IEC 61557-9).

In addition the operating instructions shall comprise the following details:

5.2.1 Connection diagrams.

5.2.2 Instructions for measurements.

5.2.3 Brief description of the principle of measurement.

5.2.4 Diagrams or tables showing the maximum permissible indicated values taking into consideration the tolerances stated by the manufacturer (if necessary).

5.2.5 Type of battery/rechargeable cells.

5.2.6 Information on the charging current, charging voltage and duration of charging for rechargeable cells.

5.2.7 Operational lifetime/runtime of the battery/rechargeable cells or the possible number of measurements.

5.2.8 Type of IP protection (IEC 60529).

5.2.9 Any necessary special guidance notes.

6 Tests

Measuring equipment shall be tested in accordance with IEC 61010-2-030 and IEC 61326-2-2 unless otherwise specified in the following subclauses or in other parts of IEC 61557 series.

All tests shall be carried out under reference conditions unless otherwise specified. The reference conditions are stated in the various parts of IEC 61557 series.

6.1 Influence of position

The variation E_1 due to changing the position in accordance with 4.2, if applicable, shall be determined for positions $+90^\circ$ or -90° from the reference position stated by the manufacturer (*routine test*).

6.2 Influence of temperature

The variation E_3 due to changing the temperature in accordance with 4.2 shall be determined under the following rated operating conditions:

- at 0°C and 35°C after reaching a state of equilibrium (*type test*).

6.3 Influence of the supply voltage

The variation E_2 due to changing the supply voltage shall be determined under the following rated operating conditions (*routine test*):

- limits in accordance with 4.2 for measuring equipment supplied from distribution systems;
- limits in accordance with 4.3 and 6.4 for measuring equipment supplied from a battery/accumulator;
- limits in accordance with 4.2 for measuring equipment supplied by a hand-driven generator.

6.4 Battery check facility

The lower and upper limits for the battery voltage to which the battery check facility in accordance with 4.3 is set, shall be determined by means of an external voltage source. These values shall be used during the test in accordance with 6.3 as limits for variation E_2 by changing the supply voltage (*routine test*).

6.5 Protection class

Compliance with double or reinforced insulation (protection class II) in accordance with 4.5 shall be checked, with the exception of measuring devices covered by IEC 61557-8 and IEC 61557-9 (*type test*).

6.6 Terminals

Terminals in accordance with 4.4 shall be checked for protection against accidental contact with live parts (*type test*).

6.7 Mechanical requirements

The test shall be executed in accordance with 4.9 (*type test*).

The tests are deemed to have been passed successfully when no parts have become loose or bent and the connecting leads are not damaged. After the process, the measuring equipment shall comply with the requirements with respect to operating uncertainty in accordance with 4.1 (*type test*).

6.8 Marking and operating instructions

The marking and the operating instructions in accordance with Clause 5 of Parts 1 to 10 of the IEC 61557 series shall be checked by visual inspection (*type test, except correct marking as routine test*).

Bibliography

IEC 60050-300:2001, *International Electrotechnical Vocabulary – Electrical and electronic measurements and measuring instruments – Part 311: General terms relating to measurements*

IEC 60050-601:1985, *International Electrotechnical Vocabulary – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 60050-826:1982, Amendment 1:1998, *International Electrotechnical Vocabulary – Part 826: Electrical installations of buildings*

IEC 60359:2001, *Expression of the performance of electrical and electronic measuring equipment*

IEC 60364-1:2001, *Electrical installations of buildings – Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60364-6:2006, *Low electrical installations – Part 6 : Verification*

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

(Continued from second cover)

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 61557-5 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 5: Resistance to earth	IS/IEC 61557-5 : 2007 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 5 Resistance to earth	Identical to IEC 61557-5 : 2007

The technical committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
IEC 60364-6 : 2006	Electrical installations — Part 6: Verification
IEC 61010-2-030	Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 2-030: Special requirements for testing and measuring circuits ¹⁾
IEC 61326-2-2 : 2005	Electricity equipment for measurement, control and laboratory use — EMC requirements — Part 2-2: Particular requirements — Test configurations, operational conditions and performance criteria for portable test measuring and monitoring equipment used in low-voltage distribution systems
IEC 61326-2-4 : 2006	Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 2: 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
IEC 61557-3	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: Residual current devices (RCD) in TT and TN systems
IEC 61557-7	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 7: Phase sequence
IEC 61557-8	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
IEC 61557-9	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 61557-10	Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. — Equipment for testing or monitoring of protective measures — Part 10: Combined measuring equipment for testing, measuring or monitoring of protective measures

Only the English language text of the International Standard has been retained while adopting it as an Indian Standard, and as such the page numbers given here are not the same as in the IEC Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

¹⁾To be published.

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

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Eastern : 1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	{ 260 3843 260 9285
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

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