



DPC: 23 / 30481358 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

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Title: BS IEC 60364-6 Low-voltage electrical installations

Part 6: Verification

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Responsible Committee Secretary: **Mr Mark Coles (IET) (BSI)**
Direct tel: **01438 767643**
E-mail: mcoles@theiet.org

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



64/2642/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER: IEC 60364-6 ED3	
DATE OF CIRCULATION: 2023-10-13	CLOSING DATE FOR COMMENTS: 2024-02-02
SUPERSEDES DOCUMENTS: 64/2641/RR	

IEC TC 64 : ELECTRICAL INSTALLATIONS AND PROTECTION AGAINST ELECTRIC SHOCK		
SECRETARIAT: Germany	SECRETARY: Mr Wolfgang Niedenzu	
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 1,SC 8B,SC 8C,TC 17,SC 17A,TC 18,TC 20,TC 22,SC 22E,SC 22G,SC 22H,TC 23,SC 23A,SC 23B,SC 23E,SC 23G,SC 23H,SC 23J,SC 23K,TC 32,SC 32B,TC 34,SC 37A,SC 37B,TC 44,TC 61,TC 69,TC 78,TC 82,TC 85,TC 95,TC 99,TC 120,TC 121,SC 121A,SC 121B,PC 128	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.	
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY		

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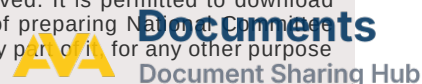
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TITLE:

Low voltage electrical installations - Part 6: Verification

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW VOLTAGE ELECTRICAL INSTALLATIONS –

Part 6: Verification

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 60364-6 has been prepared by the IEC technical committee 64: Electrical installations and protection against electric shock.

This second edition cancels and replaces the first edition published in 2006 and constitutes a technical revision.

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

- a) Normative references updated to current publications;
- b) Re-numbered to align with current IEC numbering;
- c) Initial inspection requirements: 3 items added;
- d) Testing sequence changed;
- e) General requirements for periodic reporting – more details added;
- f) New Annex A: Table A.1 – Specific resistance values for copper conductors;
- g) Annex D: Example of a diagram suitable for evaluation of voltage drop. Content removed.

- h) Annex E: Recommendation for electrical equipment which is being re-used in an electrical installation. Content removed;
- i) Annex F: Content replaced with new Annex E – Model forms for reporting;
- j) Annex G: Changed to Annex F – Model forms for inspection of electrical installations;
- k) Annex H: Changed to Annex G – Model schedule of circuit details and test results;
- l) Annex H: Listing of notes concerning some countries;
- m) Bibliography – Updated:

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

FDIS	Report on voting
64/2107/FDIS	64/2114/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.

A list of all parts in the IEC 60364 series, published under the general title *Low voltage electrical installations*, can be found on the IEC website.

The reader's attention is drawn to the fact that Annex H lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this standard.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

The contents of the corrigendum of September 2017 have been included in this copy.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

LOW VOLTAGE ELECTRICAL INSTALLATIONS –

Part 6: Verification

6.1 Scope

This part of IEC 60364 provides requirements for initial and periodic verification of an electrical installation.

Clause 6.4 provides requirements for initial verification, by inspection and testing, of an electrical installation to determine, as far as reasonably practicable, whether the requirements of the other parts of IEC 60364 have been met and requirements for the reporting of the results of the initial verification. The initial verification takes place upon the completion of a new installation or completion of an addition or an alteration to an existing installation.

Clause 6.5 provides requirements for periodic verification of an electrical installation to determine, as far as reasonably practicable, whether the installation and all its constituent equipment are in a satisfactory condition for use and requirements for the reporting of the results of the periodic verification.

6.2 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 60079-17, *Explosive atmospheres – Part 17: Electrical installations inspection and maintenance*

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60364-4-41:2017, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-4-42:2010, *Low-voltage electrical installations – Part 4-42: Protection for safety – Protection against thermal effects*
IEC 60364-4-42:2010/AMD1:2014

IEC 60364-4-44:2018, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60364-5-51:2005, *Electrical installations of buildings – Part 5-51:– Selection and erection of electrical equipment – Common rules*

IEC 60364-5-52:2009, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC 60364-5-53:2020, *Electrical installations of buildings – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 61557 (all parts), *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*

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*

6.3 Terms and definitions

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

6.3.1 verification

all measures by means of which compliance of the electrical installation with the relevant requirements of IEC 60364 is checked

Note 1 to entry: Verification comprises inspection, testing and reporting.

6.3.2 inspection

examination of an electrical installation using all appropriate senses in order to ascertain correct selection and proper erection of electrical equipment

6.3.3 testing

implementation of measures to assess an electrical installation by means through which its effectiveness is proved

Note 1 to entry: Testing includes ascertaining values by means of appropriate measuring instruments, said values not being detectable by inspection.

6.3.4 reporting

recording of the results of inspection and testing

6.3.5 maintenance

combination of all technical and administrative actions, including supervisory actions, intended to retain an item in, or restore it to, a state in which it can perform a required function

6.4 Initial verification

6.4.1 General

6.4.1.1 Every installation shall be verified during erection, as far as reasonably practicable, and on completion, before being put into service.

6.4.1.2 The information required by IEC 60364-5-51:2005, 514.5 and other information necessary for initial verification shall be made available to the person carrying out the initial verification.

6.4.1.3 The initial verification shall include comparison of the results with relevant criteria to confirm that the requirements of the IEC 60364 series have been met.

6.4.1.4 Precautions shall be taken to ensure that the verification shall not cause danger to persons or livestock and shall not cause damage to property and equipment even if the circuit is defective.

6.4.1.5 It shall be verified that an extension, addition or alteration to an existing installation complies with the IEC 60364 series and does not impair the safety of that installation, and that the safety of the new installation is not impaired by the existing installation.

6.4.1.6 The verification shall be made by a skilled person competent in verification.

NOTE Requirements concerning qualifications are a matter for national consideration.

6.4.2 Inspection

6.4.2.1 Inspection shall precede testing and shall normally be done prior to energizing the installation.

6.4.2.2 The inspection shall be made to confirm that electrical equipment which is part of the electrical installation is:

- in compliance with the safety requirements of the relevant equipment standards;

NOTE This can be ascertained by examination of the manufacturer's information, marking or certification.

- correctly selected and erected according to the IEC 60364 series and taking into account the manufacturer's instructions;

- not visibly damaged or defective so as to impair safety.

6.4.2.3 Inspection shall include at least the checking of the following, where relevant:

- a) method of protection against electric shock (see IEC 60364-4-41);
- b) presence of fire barriers and other precautions against propagation of fire and protection against thermal effects (see IEC 60364-4-42 and IEC 60364-5-52:2009, Clause 527);
- c) selection of conductors for current-carrying capacity (see IEC 60364-4-43 and IEC 60364-5-52:2009, Clauses 523);
- d) choice, setting, selectivity and coordination of protective and monitoring devices (see IEC 60364-5-53:2020, Clause 535);
- e) selection, location and installation of suitable overvoltage protective devices (SPD) where specified (see IEC 60364-5-53:2020 and IEC 60364-5-53:2001/AMD2:2015, Clause 534);
- f) selection, location and installation of suitable isolating and switching devices (see IEC 60364-5-53:2020, Clause 536);
- g) selection of equipment and protective measures appropriate to external influences and mechanical stresses (see IEC 60364-4-42:2010, Clause 422, IEC 60364-5-51:2005, 512.2 and IEC 60364-5-52:2009, Clause 522);
- h) identification of conductors (see IEC 60364-5-51:2005, Clause 514);
- i) presence of diagrams, warning notices or similar information (see IEC 60364-5-51:2005, 514.5);
- j) identification of circuits, overcurrent protective devices, switches, terminals etc. (see IEC 60364-5-51:2005, Clause 514);
- k) adequacy of termination and connection of cables and conductors (see IEC 60364-5-52:2009, Clause 526);
- l) selection and installation of earthing arrangements, protective conductors and their connections (see IEC 60364-5-54);
- m) accessibility of equipment for convenience of operation, identification and maintenance (see IEC 60364-5-51:2005, Clauses 513 and 514);
- n) measures against electromagnetic disturbances (see IEC 60364-4-44:2018, Clause 444);
- o) exposed-conductive-parts are connected to the earthing arrangement (see IEC 60364-4-41:2017, Clause 411);

p) selection and erection of the wiring systems (see IEC 60364-5-52:2009, Clauses 521 and 522).

q) design requirements for stationary batteries (see IEC 60364-5-57)

r) design requirements for energy efficiency (see IEC 60364-8-1)

s) design requirements for Prosumer installation (see IEC 60364-8-82)

Inspection shall include all particular requirements for special installations or locations.

6.4.3 Testing

6.4.3.1 General

The test methods described in 6.4.3 are given as reference methods; other methods are not precluded, provided they give no less valid results.

Measuring instruments and monitoring equipment and methods shall be chosen in accordance with the relevant parts of the IEC 61557 series. If other measuring equipment is used, it shall provide no less a degree of performance and safety.

The following tests shall be carried out where relevant and should preferably be made in the following sequence:

a) continuity of conductors (see 6.4.3.2);

b) insulation resistance (see 6.4.3.3);

c) insulation resistance testing to confirm the effectiveness of protection by SELV, PELV or electrical separation (see 6.4.3.4);

d) insulation resistance testing to confirm the effectiveness of floor and wall resistance/impedance (see 6.4.3.5);

e) polarity test (see 6.4.3.6);

f) testing to confirm effectiveness of automatic disconnection of supply (see 6.4.3.7);

g) testing to confirm the effectiveness of additional protection (see 6.4.3.8);

h) test of phase sequence (see 6.4.3.9);

i) functional tests (see 6.4.3.10);

j) voltage drop (see 6.4.3.11).

In the event of any test indicating failure to comply, that test and any preceding test, the results of which may have been influenced by the fault indicated, shall be repeated after the fault has been rectified.

When testing in a potentially explosive atmosphere appropriate safety precautions in accordance with IEC 60079-17 are necessary.

6.4.3.2 Continuity of conductors

The continuity of conductors and connection to exposed-conductive-parts, if any, shall be verified by a measurement of resistance on:

a) protective conductors, including protective bonding conductors, and

b) exposed-conductive-parts. NOTE Example values of conductor resistance are given in Annex A

6.4.3.3 Insulation resistance of the electrical installation

The insulation resistance shall be measured between:

a) live conductors, and

b) live conductors and the protective conductor connected to the earthing arrangement.

Where appropriate during this measurement, live conductors may be connected together. In practice, it may be necessary to carry out this measurement during erection of the installation before the connection of the equipment.

Where the circuit includes equipment that is likely to influence the results or be damaged, only a measurement between the live conductors connected together and earth shall be made.

The insulation resistance measured with the test voltages indicated in Table 6.1 shall be considered satisfactory if the main switchboard and each distribution circuit tested separately, with all its final circuits connected but with current-using equipment disconnected, has an insulation resistance not less than the appropriate value given in Table 6.1.

Table 6.1 – Minimum values of insulation resistance

Nominal circuit voltage V	Test voltage DC V	Minimum insulation resistance MΩ
SELV and PELV	250	0.5
Up to and including 500 V, including FELV	500	1
Above 500 V	1 000	1

Table 6.1 shall be applied for a verification of the insulation resistance between non-earthed protective conductors and earth.

FELV circuits shall be tested at the same test voltage as that applied to the primary side of the source.

Where surge protective devices (SPDs) or other equipment are likely to influence the verification test, or be damaged, such equipment shall be disconnected before carrying out the insulation resistance test.

Where it is not reasonably practicable to disconnect such equipment (e.g. in case of fixed socket-outlets incorporating an SPD) the test voltage for a particular circuit may be reduced to 250 V DC but the insulation resistance shall have a value of at least 1 MΩ.

Where a live part is connected to the earthing arrangement, it shall be disconnected from the earthing arrangement during the measurement.

In TN-C systems, a measurement should be made between the live conductors and the PEN conductor.

Insulation resistance values are usually much higher than those of Table 6.1. When measured values show evident differences between circuits, further investigation to identify the reasons is required.

6.4.3.4 Insulation resistance testing to confirm effectiveness of SELV, PELV or electrical separation

The separation of circuits shall be in accordance with 6.4.3.4.1 in the case of protection by SELV, 6.4.3.4.2 in the case of protection by PELV and 6.4.3.4.3 in the case of protection by electrical separation.

The resistance value obtained in 6.4.3.4.1, 6.4.3.4.2 and 6.4.3.4.3 shall be at least that of the circuit with the highest voltage present in accordance with Table 6.1.

6.4.3.4.1 Protection by SELV

The separation of live parts from those of other circuits and from earth, according to IEC 60364-4-41:2005, Clause 414, shall be confirmed by a measurement of the insulation resistance.

6.4.3.4.2 Protection by PELV

The separation of the live parts from other circuits, according to IEC 60364-4-41:2005 Clause 414, shall be confirmed by a measurement of the insulation resistance.

6.4.3.4.3 Protection by electrical separation

The separation of the live parts from those of other circuits and from earth, according to IEC 60364-4-41:2005, Clause 413, shall be confirmed by a measurement of the insulation resistance.

For electrical separation with more than one item of current-using equipment, it shall be verified either by measurement or by calculation that in the case of two coincidental faults with negligible impedance between different line conductors and either the protective bonding conductor or exposed-conductive-parts connected to it, at least one of the faulty circuits shall be disconnected. The disconnection time shall be in accordance with that for the protective measure automatic disconnection of supply in a TN system.

6.4.3.5 Insulation resistance/impedance of floors and walls

When it is necessary to comply with the requirements of IEC 60364-4-41:2005, Clause C.1, at least three measurements shall be made in the same location, one of these measurements being approximately 1 m from any accessible extraneous-conductive-part in the location. The other two measurements shall be made at greater distances.

The measurement of resistance/impedance of insulating floors and walls is carried out with the system voltage to earth at nominal frequency.

The above series of measurements shall be repeated for each relevant surface of the location.

NOTE Further information on the measurement of the insulation resistance/impedance of floors and walls is given in Annex B.

6.4.3.6 Polarity

Where relevant, the polarity of the supply at the origin of the installation shall be verified before the installation is energized.

Where single-pole switching devices are not permitted in the neutral conductor, a test shall be made to verify that all such devices are connected in the line conductor(s) only.

During the polarity test, it should be verified that:

- a) every fuse and single-pole control and protective device is connected in the line conductor only, and
- b) except for E14 and E27 lampholders according to IEC 60238, in circuits having an earthed neutral conductor centre contact bayonet and Edison screw lampholders, the outer or screwed contacts are connected to the neutral conductor, and
- c) wiring has been correctly connected at all relevant points in final circuits.

6.4.3.7 Protection by automatic disconnection of supply

NOTE Where RCDs are employed also for protection against fire, the verification of the conditions for protection by automatic disconnection of the supply can be considered as covering the relevant requirements of IEC 60364-4-42.

6.4.3.7.1 General

The effectiveness of the measures for fault protection by automatic disconnection of supply shall be verified for every intended combination of sources of supply.

The verification of the effectiveness of the measures for fault protection by automatic disconnection of supply is effected as follows:

a) For a TN system

Compliance with the rules of IEC 60364-4-41: 2005, 411.4.4 and 411.3.2 shall be verified by:

1) Measurement of the earth fault loop impedance where possible (see 6.4.3.7.3).

Alternatively, where the measurement of earth fault loop impedance is not possible the verification of the electrical continuity of the protective conductors (see 6.4.3.2) is sufficient provided that calculations of earth fault loop impedance or protective conductor resistance are available; and

2) Verification of the characteristics and/or the effectiveness of the associated protective device. This verification shall be made:

- for overcurrent protective devices, by visual inspection or other appropriate methods (i.e. short time or instantaneous tripping setting for circuit-breakers, current rating and type for fuses);
- for RCDs, by visual inspection.

The effectiveness of automatic disconnection by RCDs may be verified using suitable test equipment according to IEC 61557-6.

Where the effectiveness of the protective measure has been confirmed at a point located downstream of an RCD, the protection of the installation downstream from this point may be proved by confirmation of the continuity of the protective conductors.

b) For a TT system

Compliance with the rules of IEC 60364-4-41: 2005, 411.5.3 and 411.3.2 shall be verified by:

1) Measurement of the resistance R_A of the earth electrode or the impedance Z_s of the fault loop for exposed-conductive-parts of the installation (see 6.4.3.7.2); and

NOTE Annex C provides some examples of applicable methods for measurement of earth electrode resistance.

2) Verification of the characteristics and/or the effectiveness of the associated protective device. This verification shall be made:

- for overcurrent protective devices, by visual inspection or other appropriate methods (i.e. short time or instantaneous tripping setting for circuit-breakers, current rating and type for fuses);
- for RCDs, by visual inspection.

The effectiveness of automatic disconnection by RCDs may be verified using suitable test equipment according to IEC 61557-6.

Where the effectiveness of the protective measure has been confirmed at a point located downstream of an RCD, the protection of the installation downstream from this point may be proved by confirmation of the continuity of the protective conductors.

c) For an IT system

Compliance with the rules of IEC 60364-4-41: 2005, 411.6.2 shall be verified by calculation or measurement of the current I_d in case of a first fault of a live conductor.

The measurement is made only if the calculation is not possible, because all the parameters are not known. Precautions are to be taken while making the measurement in order to avoid the danger due to a double fault.

In the case of a double earth fault, the fault loop impedance shall be verified by calculations or by measurements. Where the condition is similar to that of a TT-system (see IEC 60364-4-41:2005, 411.6.4 item b), verification shall be made as for a TT system (see 6.4.3.7.1, item b)). Where conditions are similar to that of a TN-system (see IEC 60364-4-41:2005, 411.6.2), verification by measurement shall be made as follows.

- For IT installations supplied from a local transformer, the earth-loop impedance is measured by inserting a connection with negligible impedance between a live conductor and earth at the origin of the installation. The earth-loop impedance measurement is made between a second live conductor and protective-earth at the end of the circuit. Verification is achieved if the measured value is ≤ 50 % of the maximum allowed loop-impedance.
- For IT systems connected to a public grid, the earth fault loop impedance is determined by verification of the continuity of the protective conductor and measuring the loop-impedance between two live conductors at the end of the circuit. Verification is achieved if the measured value is ≤ 50 % of the maximum permitted loop-impedance. If verification is not achieved, more detailed measurements are necessary.

6.4.3.7.2 Measurement of the resistance of the earth electrode

Measurement of the resistance of an earth electrode, where prescribed (see IEC 60364-4-41:2005, 411.5.3, for a TT system, 411.4.1, for a TN system, and 411.6.2, for an IT system), shall be made by an appropriate method. When measuring the resistance is not possible, the resistance may also be calculated using applicable values.

NOTE 1 Annex C, Method C1 gives, as an example, a description of a method of measurement using two auxiliary earth electrodes and the conditions to be fulfilled.

NOTE 2 Where the location of the installation (e.g. in towns) is such that it is not possible in practice to provide the two auxiliary earth electrodes, measurement of the earth fault loop impedance according to 6.4.3.7.3, or Annex C, Methods C2 and C3 will give an acceptable approximate value.

6.4.3.7.3 Measurement of the earth fault loop impedance

An electrical continuity test shall be carried out according to 6.4.3.2 before carrying out the earth fault loop impedance measurement.

The measured earth fault loop impedance shall comply with IEC 60364-4-41: 2005, 411.4.4 for TN systems and with IEC 60364-4-41: 2005, 411.6.4 for IT systems.

Where the requirements of 6.4.3.7.2 are not satisfied or in case of doubt and where supplementary bonding according to IEC 60364-4-41:2005, 415.2 is applied, the effectiveness of that bonding shall be checked according to IEC 60364-4-41:2005, 415.2.2.

NOTE: Annex D.6.4.3.7.3 provides guidance on taking the increase of conductor temperature into account when determining earth fault loop impedance.

6.4.3.8. Additional protection

The verification of the effectiveness of the measures applied for additional protection is fulfilled by visual inspection.

The effectiveness of automatic disconnection of supply by RCD may be verified using suitable test equipment according to IEC 61557-6.

Where additional protection is provided by supplementary protective bonding, the effectiveness of that bonding shall be checked according to IEC 60364-4-41:2005, 415.2.2.

6.4.3.9 Phase sequence

In the case of multiphase circuits, it shall be verified that the phase sequence is maintained.

6.4.3.10 Functional testing

Equipment shall be subjected to functional testing to verify that it is properly mounted, adjusted and installed in accordance with the relevant requirements of the IEC 60364 series. Examples of such equipment are:

- switchgear and controlgear assemblies, drives, controls and interlocks,
- systems for emergency switching off and emergency stopping,
- insulation monitoring,
- transfer switching equipment (TSE).

6.4.3.11 Verification of voltage drop

Where required to verify compliance with IEC 60364-5-52: 2009, Clause 525, the voltage drop shall be evaluated by measurement or by calculation (see IEC 60364-5-52: 2009, Annex G).

NOTE: Annex D.6.4.3.11 provides guidance on measurement of voltage drop.

6.4.4 Reporting for initial verification

6.4.4.1 Upon completion of the verification of a new installation or additions or alterations to an existing installation, an electrical installation verification report shall be provided. Such documentation shall include details of the extent of the installation covered by the report, together with a record of the inspection and the results of testing.

Any defects or omissions revealed during verification of the installation shall be corrected before the person carrying out the verification declares that the installation complies with the IEC 60364 series.

6.4.4.2 In the case of initial verification of alterations or additions of existing installations, the report may contain recommendations for repairs and improvements, as may be appropriate.

6.4.4.3

The Initial report shall include details of the extent of the work covered, and schedules of:

- inspections, and
- circuit details and test results.

The records of circuit details and test results shall identify every circuit, including its related protective device(s) and shall record the results of the appropriate tests and measurements.

6.4.4.4 The person or persons responsible for the design, construction and verification of the installation shall give the report, which takes account of their respective responsibilities, to the person ordering the work, together with the records mentioned in 6.4.4.3.

The initial report of the electrical installation should make a recommendation for a period between initial verification and the first periodic verification.

6.4.4.5 Reports shall be compiled and signed or otherwise authenticated by a skilled person or persons competent in verification.

NOTE Annexes E, F and G contain model forms of reports and schedules that can be used for the description of initial and periodic verification of installations which are particularly suitable for domestic installations. National committees may adapt the content of these annexes to suit national conditions and practices.