

# INTERNATIONAL STANDARD

## AMENDMENT 1

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**Information technology – Telecommunications bonding networks for buildings  
and other structures**

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## FOREWORD

This amendment has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

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

FDIS	Report on voting
JTC1-SC25/2849/FDIS	JTC1-SC25/2858/RVD

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

## 2 Normative references

Add, at the end of the list, the following new references:

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 61557-5, *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*

## 3 Terms, definitions and abbreviations

### 3.1 Terms and definitions

Add, at the end of the list, the following new terms and definitions:

#### 3.1.26

##### high frequency

frequency of, or greater than, 1 MHz

#### 3.1.27

##### low frequency

frequency of less than 1 MHz

## 4 Conformance

In b)2), first bullet, replace "Clause 5" with "Clause 6".

Add the following text at the end of the NOTE:

IEC 60364-4-44 contains additional information.

## 6 Selection of the telecommunications bonding network approach

### 6.1 Assessment of the impact of the telecommunications bonding network on the interconnection of telecommunications equipment

*Replace paragraphs 2, 3 and 4 with the following:*

The mesh bonding network of Clause 11 provides the most effective bonding at high frequencies and can provide effective bonding at low frequencies. It is intended to support the most demanding requirements of both cabling media and the applications supported over those media (see Table 1). In addition, it provides the most flexibility in relation to the types and locations of telecommunications equipment that may be installed (subject to the transmission performance limits of the applications when using the selected telecommunications cabling).

The installation of such a telecommunications bonding network is most easily implemented during new construction or refurbishment of a building or structure.

Within an existing building or structure:

- a) the cost and complexity of installing a telecommunications bonding network that will support the requirements of applications operating over asymmetric cabling between any two points in a building may be prohibitive,
- b) the implementation of an all-optical network has no implications for the telecommunications bonding network but would substantially impact on the cost of transmission and terminal equipment and may not be viable for all intended applications.

Therefore an assessment has to be made based on a balance between complexity of the telecommunications bonding network and the type of cabling media and the application supported over those media between and within the zones described in Figure 2. This assessment has also to take into consideration the transmission performance requirements of the applications when using the selected telecommunications cabling.

Following this assessment, if there are financial or technical justifications for an implementation other than that of Clause 11, then the bonding networks of Clauses 8, 9 or 10 (as appropriate) should be considered taking into account the risk of telecommunications disruption.

Any bonding approach specified in this standard is enhanced by the installation of power distribution systems conforming to TN-S as described in the IEC 60364 series of standards and, in particular, IEC 60364-4-44.

### 6.2 Telecommunications bonding networks

*Replace paragraph 2 and NOTE with the following:*

Where the building or structure has, or will have, lightning protection in accordance with the IEC 62305 series, the mesh bonded network of Clause 11 can be used in conjunction with the "integrated lightning protection system" according to IEC 62305-4.

Other lightning protection systems, including the "isolated lightning protection system" according to IEC 62305-3, may be used provided that specific restrictions are applied as agreed between the planners of the lightning protection system and the bonding network.

### 6.3 Telecommunications bonding network performance

#### 6.3.1 General

##### 6.3.1.1 Protective bonding networks

Replace paragraph 1 with the following:

Protective bonding networks can provide adequate performance for the telecommunications infrastructure. Where a protective bonding network is found not to comply with the requirements of 6.3.2.1 and 6.3.2.2, corrective actions shall be undertaken before decisions are taken in relation to the implementation of the telecommunications bonding network.

#### 6.3.2 Requirements

##### 6.3.2.1 General requirements

Add the following NOTE at the end of 6.3.2.1:

NOTE The use of multiple bonding conductors as described in Clauses 7, 8, 9, 10 and 11 improves the impedance by a factor equal to the number of additional connections.

**Table 3 – DC resistance requirements for protective bonding networks**

Replace Table 3 with the following new table:

Connections between	Requirement maximum mΩ/m <sup>a</sup>
Busbars in electrical distributors with a zone	2,5
Busbars in electrical distributors within adjacent zones	2,5
<sup>a</sup> Based on the shortest length between the two points.	

**Table 4 – DC resistance requirements for dedicated telecommunications bonding networks**

Replace Table 4 with the following new table:

Connections between	Requirement maximum mΩ/m <sup>a</sup>
Any point of the bonding network and the MET	1,67
Any primary bonding busbar (PBB) and a connected secondary bonding busbar (SBB)	1,67
Any point of connection to the bonding network within a zone and the connected secondary bonding busbar (SBB)	1,67
Primary bonding busbar (PBB) or secondary bonding busbar (SBB) to structural steel	1,67
<sup>a</sup> Based on the shortest bonding conductor length between the two points.	

### 6.3.3 DC resistance measurements

#### 6.3.3.1 General

*Replace paragraphs 1 and 2 with the following:*

Tests shall be undertaken with equipment meeting the requirements of IEC 61557-4 or IEC 61557-5. The accuracy of the measured value shall be included with the test result documentation.

## 7.4 Telecommunications bonding network components

### 7.4.1 Telecommunications bonding network conductors

#### 7.4.1.2 Installation

*Insert the following NOTE after paragraph 3:*

NOTE The separation of bonding conductors can have an impact on the space required by the associated cable management systems.

## 11 Mesh bonded networks

*Replace paragraph 1 with the following text:*

The mesh bonded networks provide enhanced immunity to EMI compared to that provided by the bonding networks specified in Clauses 8, 9 and 10. The objective is to provide:

- a d.c. resistance between adjacent points of the grid created by the mesh of no more than 1 mΩ (approximately);
- an inductance between adjacent points of the grid created by the mesh of no more than 6 μH (approximately).

This enhanced performance mitigates issues resulting from steady-state and transient voltages and currents generated by lightning, power systems, power circuit earth faults and EMI.

## Bibliography

*Add, at the end of the list, the following new references:*

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

IEC 62305 (all parts), *Protection against lightning*

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