

Lightning Protection System Components (LPSC) - Part 1: Requirements for connection components

This document is a preview generated by EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62561-1:2012 sisaldab Euroopa standardi EN 62561-1:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 62561-1:2012 consists of the English text of the European standard EN 62561-1:2012.
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 01.06.2012.	Date of Availability of the European standard is 01.06.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.020, 91.120.40

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

**Lightning Protection System Components (LPSC) -
Part 1: Requirements for connection components**
(IEC 62561-1:2012, modified)

Composants des systèmes de protection
contre la foudre (CSPF) -
Partie 1: Exigences pour les composants
de connexion (CEI 62561-1:2012,
modifiée)

Blitzschutzsystembauteile (LPSC) -
Teil 1: Anforderungen an
Verbindungsbauteile
(IEC 62561-1:2012, modifiziert)

This European Standard was approved by CENELEC on 2012-03-16. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, 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, Turkey and the United Kingdom.

CENELEC

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 81/416/FDIS, future edition 1 of IEC 62561-1, prepared by IEC/TC 81, "Lightning protection", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62561-1:2012.

A draft amendment, which covers common modifications to IEC 62561-1 (81/416/FDIS), was prepared by CLC/TC 81X "Lightning protection" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-03-16
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-03-16

This document supersedes EN 50164-1:2008.

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.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62561-1:2012 are prefixed "Z".

Endorsement notice

The text of the International Standard IEC 62561-1:2012 was approved by CENELEC as a European Standard with agreed common modifications.

COMMON MODIFICATIONS

Whole document

Replace all references to IEC 62305 by references to EN 62305.

Replace all references to IEC 62561 by references to EN 62561.

4 Classification

After 4.2, **add** the following:

4.21 Classification is also made according to its mechanical behaviour for connectors:

- a) declared to withstand static mechanical load 900 N;
- b) not intended to carry static mechanical load.

6 Tests

Replace the whole 6.4 by the following:

6.4 Static mechanical test

6.4.Z1 General

The static mechanical test is specifically applicable to the configurations B2/B3/B7 as shown in Annex B. For other applications, it is neither practical nor necessary to carry out static mechanical tests and is therefore not a requirement. For specific applications such as connectors embedded in concrete, it is not required to carry out mechanical tests.

The test shall be performed with all conductor materials permitted according to the manufacturer's declaration. To minimize the number of tests, connectors that are used with several different conductor materials shall be performed using stainless steel.

Any connector with a connection range equal to or less than 2 mm shall be tested on the minimum conductor size recommended. If the connection range is greater than 2 mm it shall be tested on the minimum and maximum size of conductor recommended.

6.4.Z2 Test procedure

A second set of 3 new connectors shall be arranged according to the manufacturer's or supplier's installation instructions with the recommended conductor materials, sizes and tightening torques.

Each conductor of the specimen assemblies shall be subjected independently to a mechanical tensile force of $900\text{ N} \pm 20\text{ N}$ for 1 min.

The connection component is deemed to have passed the test if there is less than 1 mm movement of the conductor during the test and no damage on the connector or conductor.

Annexes

Annex C (normative) Conditioning/ageing for connection components

In C.1, **replace** twice "IEC 60068-2-52:1996" by "EN 60068-2-52:1996".

Add the following new annexes:

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 Where 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 60068-2-52 + corr. July	1996 1996	Environmental testing - Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	EN 60068-2-52	1996
IEC 62305-1	-	Protection against lightning - Part 1: General principles	EN 62305-1	-
IEC 62561-2	-	Lightning Protection System Components (LPSC) - Part 2: Requirements for conductors and earth electrodes	EN 62561-2	-
ISO 6957	1988	Copper alloys - Ammonia test for stress corrosion resistance	-	-
ISO 6988	1985	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture	EN ISO 6988	1994

Annex ZB
(informative)

**Identification and differences of tests
between EN 62561-1:2012 and EN 50164-1:2008**

**Table ZB.1 – Identification and differences of tests
between EN 62561-1:2012 and EN 50164-1:2008**

Test description	EN 62561-1:2012	EN 50164-1:2008	Deviations / Remarks
Test preparation	6.2	6.2	None
Electrical test	6.3	6.3	Yes for screwless connection components
Static mechanical test	6.4	–	Yes
Marking test	6.5	6.4	None

Bibliography

Add the following references:

EN 62305-3, *Protection against lightning – Part 3: Physical damage to structures and life hazard* (IEC 62305-3)

EN 62305-4, *Protection against lightning – Part 4: Electrical and electronic systems within structures* (IEC 62305-4)

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Classification.....	8
5 Requirements	9
5.1 General.....	9
5.2 Installation instructions.....	9
5.3 Lightning current carrying capability	9
5.4 Static mechanical stress.....	9
5.5 Screwed clamping connection	9
5.6 Dismantling of test joints	9
5.7 Damage to conductors and metal installations	9
5.8 Safe connection	10
5.9 Terminals of bonding bars	10
5.10 Marking	10
6 Tests.....	10
6.1 General conditions for tests.....	10
6.2 Test preparation	11
6.2.1 Arrangement of the specimen	11
6.2.2 Conditioning/ageing.....	11
6.3 Electrical test	11
6.4 Static mechanical test	12
6.5 Marking test	13
7 Electromagnetic compatibility (EMC)	13
8 Structure and content of the test report	13
8.1 General.....	13
8.2 Report identification	13
8.3 Specimen description	13
8.4 Conductor	14
8.5 Standards and references	14
8.6 Test procedure	14
8.7 Testing equipment description.....	14
8.8 Measuring instruments description	14
8.9 Results and parameters recorded.....	14
8.10 Statement of pass/fail.....	15
Annex A (informative) Summary of the requirements and corresponding tests	18
Annex B (informative) Typical arrangements for various LPSCs.....	19
Annex C (normative) Conditioning/ageing for connection components	20
Bibliography.....	21
Figure 1 – Basic arrangement of specimen with cross connection component	15
Figure 2 – Basic arrangement of specimen with parallel connection component.....	16
Figure 3 – Basic arrangement of specimen with bridging component.....	16

Figure 4 – Basic arrangement of specimen with equipotential bonding bar	17
Figure 5 – Basic arrangement for contact measurement of expansion piece	17
Table 1 – Lightning impulse current (I_{imp}) parameters	12
Table A.1 – Requirements and corresponding tests	18

This document is a preview generated by EVS

INTRODUCTION

This part of IEC 62561 deals with the requirements and tests for lightning protection system components (LPSC) used for the installation of a lightning protection system (LPS) designed and implemented according to the IEC 62305 series of standards.

This document is a preview generated by EVS

LIGHTNING PROTECTION SYSTEM COMPONENTS (LPSC) –

Part 1: Requirements for connection components

1 Scope

This part of IEC 62561 specifies the requirements and tests for metallic connection components that form part of a lightning protection system (LPS). Typically, these can be connectors, bonding and bridging components, expansion pieces and test joints.

Testing of components for an explosive atmosphere is not covered by this standard.

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 60068-2-52:1996, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 62305-1, *Protection against lightning – Part 1: General principles*

IEC 62561-2, *Lightning protection system components (LPSC) – Part 2: Requirements for conductors and earth electrodes*

ISO 6957:1988, *Copper alloys – Ammonia test for stress corrosion resistance*

ISO 6988:1985, *Metallic and other non-organic coatings – Sulfur dioxide test with general condensation of moisture*

3 Terms and definitions

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

3.1

connection component

part of an external LPS which is used for the connection of conductors to each other or to metallic installations

Note 1 to entry Connection component includes connectors, clamps, bridging component and expansion piece.

3.2

metal installation

extended metal items in the structure to be protected which may form a path for lightning current, such as pipes, staircases, elevator guide rails, ventilation, heating and air conditioning ducts, and interconnected reinforcing steel

3.3

bridging component

connection component for the connection of metal installations