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del: Spojke

Test requirements for low voltage aerial bundled cable accessories - Part 4: Connectors

Prüfanforderungen für Bauteile für isolierte Niederspannungsfreileitungen - Teil 4:
Verbinder

Prescriptions relatives aux essais des accessoires pour réseaux aériens basse tension
torsadés - Partie 4: Connecteurs

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29.240.20 Daljnovodi

Power transmission and
distribution lines

SIST EN 50483-4:2026

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Prüfanforderungen für Bauteile für isolierte Niederspannungsfreileitungen - Teil 4: Verbinder

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EN 50483-4:2025 (E)**European foreword**

This document (EN 50483-4:2026) has been prepared by CLC/TC 20 “Electric cables”.

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) 2027-04-30
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2029-04-30

This document supersedes EN 50483-4:2009 and all of its amendments and corrigenda (if any).

EN 50483-4:2026 includes the following significant technical changes with respect to EN 50483-4:2009:

- Scope was extended to brackets.

This is Part 4 of the EN 50483 series, “Test requirements for low voltage aerial bundled cable accessories”, which has six parts:

- Part 1: Generalities;
- Part 2: Tension and suspension clamps, fittings and brackets for self-supporting system;
- Part 3: Tension and suspension clamps, fittings and brackets for neutral messenger system;
- Part 4: Connectors;
- Part 5: Electrical ageing test;
- Part 6: Environmental testing.

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Introduction

The objective of the EN 50483 series is to provide a method of testing the suitability of accessories when used under normal operating conditions with low voltage aerial bundled cables (ABC) complying with HD 626 S2.

This document does not invalidate existing approvals of products achieved on the basis of national standards and specifications and/or the demonstration of satisfactory service performance. However, products approved according to such national standards or specifications cannot directly claim approval to this document. It might be possible, subject to agreement between the customer and the manufacturer and/or the supplier, and/or the relevant conformity assessment body, to demonstrate that conformity to the earlier standard can be used to claim conformity to this document, provided an assessment is made of any additional type testing that might need to be carried out. Any such additional testing that is part of a sequence of testing cannot be done separately.

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EN 50483-4:2025 (E)**1 Scope**

The EN 50483 series applies to overhead line fittings for tensioning, supporting and connecting aerial bundled cables (ABC) of rated voltage $U_0/U (U_m)$: 0,6/1 (1,2) kV.

This document applies to connectors used for the electrical connection of ABC.

The connectors are designed to be installed where either the main and/or branch cable is ABC as defined by HD 626 S2.

Tests described in this document are type tests.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 50182, *Conductors for overhead lines - Round wire concentric lay stranded conductors*

EN 50483-1:2026, *Test requirements for low voltage aerial bundled cable accessories - Part 1: Generalities*

EN 50483-5:2026, *Test requirements for low voltage aerial bundled cable accessories*

EN 50483-6:2026, *Test requirements for low voltage aerial bundled cable accessories*

EN 60529:1991,¹ *Degrees of protection provided by enclosures (IP Code)*

HD 626 S2, *Overhead distribution cables of rated voltage $U_0/U(U_m)$: 0,6/1 (1,2) kV*

IEC 60050-461, *International Electrotechnical Vocabulary (IEV) – Part 461: Electric cables*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-461 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1**aerial bundled cable****ABC**

aerial cable consisting of a group of insulated conductors which are twisted together including, or not, a non-insulated conductor

[SOURCE: IEC 461-08-02, modified]

Note 1 to entry: The terms bundled conductors, bundled cables, bundled cores, conductor bundles and bundle could be used as equivalent to the term aerial bundled cable (ABC).

¹ As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/AC:2016-12 and EN 60529:1991/A2:2013/AC:2019-02.

3.2**aerial insulated cable**

insulated cable designed to be suspended overhead and outdoors

[SOURCE: IEC 60853-1:2014]

3.3**branch connector**

metallic device for connecting a branch conductor to a main conductor at an intermediate point on the latter

[SOURCE: IEC 60853-1:2014]

3.4**branch conductor**

conductor connected to the main conductor by a connector

3.5**conductor insulation**

insulation applied on a conductor

[SOURCE: IEC 60853-1:2014, modified]

3.6**conductor**

<of a cable> part of a cable which has the specific function of carrying current

[SOURCE: IEC 60853-1:2014]

3.7**connector**

metallic device to connect cable conductors together

[SOURCE: IEC 60853-1:2014]

3.8**core**

assembly comprising conductor and its own insulation

[SOURCE: IEC 60853-1:2014, modified]

3.9**insulation**

<of a cable> insulating materials incorporated in a cable with the specific function of withstanding voltage

[SOURCE: IEC 60853-1:2014]

3.10**insulation piercing connector (IPC)**

connector in which electrical contact with the conductor is made by metallic protrusions which pierce the insulation of the ABC core

[SOURCE: IEC 60853-1:2014, modified]

3.11**messenger**

wire or rope, the primary function of which is to support the cable in aerial installations, which may be separate from or integral with the cable it supports

[SOURCE: IEC 60853-1:2014]

EN 50483-4:2025 (E)**3.12****minimum breaking load****MBL**

minimum breaking load of the conductor given by HD 626 S2 or the cable manufacturer if not defined in the standard or minimum breaking load of the clamp given by the clamp manufacturer

3.13**neutral messenger system**

aerial insulated system where only the neutral messenger supports the ABC

3.14**pre-insulated lug****pre-insulated terminal lug**

insulated metallic device for connecting an insulated cable conductor to other electrical equipment

3.15**pre-insulated through connector****pre-insulated through connector sleeve**

insulated metallic device for connecting two consecutive lengths of insulated conductors

3.16**rated tensile strength****RTS**

estimate of the conductor breaking load calculated using the specified tensile properties of the component wires

[SOURCE: EN 50182:2001, 3.7]

3.17**reusable connector**

connector for connecting ABC to stripped cable or bare conductor where only the branch connection can be reused

3.18**self-supporting system**

aerial insulated system where all the cores of the ABC contribute to its support

3.19**sheath**

uniform and continuous tubular covering of metallic or non-metallic material, generally extruded

[SOURCE: IEC 461-05-03]

3.20**shear head**

head of a bolt, or a device fitted over the head of a bolt or a nut, which is designed to break at a specified torque

3.21**type test**

test required to be made before supplying a type of material covered by this document on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application

Note 1 to entry: These tests are of such a nature that, after they have been made, they need not be repeated unless changes are made to the accessory materials, design or type of manufacturing process which might change the performance characteristics.

4 Symbols

ρ resistivity ($\Omega.m$)

5 Characteristics

These connectors shall connect cables designed to HD 626 S2 and withstand the following type tests.

6 Marking

See Clause 6 of EN 50483-1:2026.

7 General test conditions

7.1 Generalities

See Clause 9 of EN 50483-1:2026.

Minimum and maximum cross-sections of the conductors used for the tests shall be the minimum and maximum cross-sections for which the connector is designed.

All conductors used in these tests shall be pre-conditioned in accordance with 7.2.

When tensile test loads are applied to conductors the rate of increase shall be in accordance with EN 50483-1:2026, 9.1.4.

A torque meter shall be used for all tightening operations and it shall have a resolution and accuracy in accordance with EN 50483-1:2026, 9.1.8.

All tests shall be carried out at ambient temperature unless otherwise stated in this document.

The frequency of a.c. tests shall be in accordance with EN 50483-1:2026, 9.1.1.

The relative humidity shall be in accordance with EN 50483-1:2026, 9.1.9 unless otherwise altered by this document.

If a cable breaks beyond any part of a connector, the test result shall be declared void without discrediting the connector. Tests can be repeated using a new connector and a new cable.

7.2 Preconditioning of ABC

New cores or cables shall be used.

Cores shall be pre-conditioned according to EN 50483-1:2026, 9.1 in order to ensure the dimensional stabilization of the insulating sheath.

The extremities of the service cables shall be installed into the connector in accordance with the instructions given by the connector manufacturer.

For the voltage and water tightness tests in 8.1.3, if the connector is tested in horizontal position, the cores shall first be bent and held in a rigid position using an appropriate device in order to prevent damage to the connections during handling, as required in the specific test.

For the climatic ageing test in 8.1.5.3, the cores shall be bent as for the dielectrical voltage and water tightness tests and their ends shall be tightly capped to prevent moisture from penetrating the conductors, as required in the specific test.

When there is a requirement to bend the cables, the bending radius shall be at least 15 times the outer diameter of the core.

The cores should be shaped before installing the connectors.

Cores used should comply with the piercing test of the insulating sheath defined in HD 626 S2 where the customer requires this and it is applicable to the type of cable being tested.

EN 50483-4:2025 (E)**8 Type tests****8.1 IPC tests****8.1.1 Installation of IPCs**

Connectors shall be installed in accordance with the manufacturer's instructions. A torque meter, in accordance with EN 50483-1:2026, 9.1.8, shall be used for all tightening and untightening operations.

Tightening shall be at the rate specified in EN 50483-1:2026, 9.1.10.

The same core (e.g. Phase 1) of a cable with the same cross-section shall be used for each test.

Connectors, used on cores with a cross-section lower than, or equal to, 35 mm², can be held in position during tightening if necessary.

8.1.2 Mechanical testing**8.1.2.1 General**

The following tests are designed to ensure that the IPC is both mechanically suitable and does not damage the conductors it connects:

Test	Subclause
Test for mechanical damage to the main conductor	8.1.2.2
Branch cable pull-out test	8.1.2.3
Connector bolt tightening test	8.1.2.4
Shear head function test	8.1.2.5
Low temperature impact test	8.1.2.6

8.1.2.2 Test for mechanical damage to the main conductor**8.1.2.2.1 Principle**

This test ensures that the mechanical performance of the conductor is not impaired as a consequence of the installation of the IPC.

8.1.2.2.2 Test arrangement

Two samples shall be tested. Where the IPC is designed to accept more than one size of core, 2 samples shall be tested in each of the following conductor combinations:

Main	Branch
max.	max.
min.	min.
min.	max.

Where max. min. combination is required this may be agreed between the customer and the manufacturer.

The core shall be mounted in a tensile test machine in a suitable manner.

The core, on which the IPCs will be tested, shall be tensioned to between 10 % and 15 % of its MBL for aluminium conductors (AAC) and between 15 % and 20 % of its MBL for all other conductors as defined in HD 626 S2 (for example copper and AAAC).

The core length shall be between 0,5 m and 1,5 m.

When using bare main conductors according to EN 50182 not included in HD 626 S2, RTS shall be used.