

KAABLID FOTOELEKTRILISTELE SÜSTEEMIDELE

Electric cables for photovoltaic systems
(BT(DE/NOT)258)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Electric cables for photovoltaic systems (BT(DE/NOT)258)

Câbles électriques pour systèmes photovoltaïques
(BT(DE/NOT)258)

Kabel und Leitungen - Leitungen für Photovoltaik Systeme
(BT(DE/NOT)258)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This document (EN 50618:2014) 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) 2015-10-27
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-10-27

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This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

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Introduction

This standard specifies cables for use in Photovoltaic (PV) Systems, in particular for installation at the Direct Current (d.c.) side. These cables are suitable for permanent outdoor use for many years under variable demanding climate conditions. Relatively stringent requirements are set for these products in line with the expected harsh usage conditions.

During the writing of this standard the joint work of TC 64 (Electrical installations and protection against electric shock) and TC 82 (Solar Photovoltaic Energy Systems) on the design and installation of PV systems has been taken into account.

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1 Scope

This European Standard applies to low smoke halogen-free, flexible, single-core power cables with cross-linked insulation and sheath. In particular for use at the direct current (d.c.) side of photovoltaic systems, with a nominal d.c. voltage of 1,5 kV between conductors and between conductor and earth.

The cables are suitable to be used with Class II equipment.

The cables are designed to operate at a normal maximum conductor temperature of 90 °C, but for a maximum of 20 000 hours a max. conductor temperature of 120 °C at a max. ambient temperature of 90 °C is permitted.

NOTE The expected period of use under normal usage conditions as specified in this standard is at least 25 years.

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.

EN 50289-4-17, *Communication cables – Specifications for test methods – Part 4-17: Test methods for UV resistance evaluation of the sheath of electrical and optical fibre cable*

EN 50395:2005, *Electrical test methods for low voltage energy cables*

EN 50396:2005, *Non electrical test methods for low voltage energy cables*

EN 50525-1:2011, *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) – Part 1: General requirements*

EN 50565-1:2014, *Electric cables – Guide to use for cables with a rated voltage not exceeding 450/750 V (U₀/U) – Part 1: General guidance*

EN 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state (IEC 60068-2-78)*

EN 60216-1, *Electrical insulating materials – Thermal endurance properties – Part 1: Ageing procedures and evaluation of test results (IEC 60216-1)*

EN 60216-2, *Electrical insulating materials – Thermal endurance properties – Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria (IEC 60216-2)*

EN 60228:2005, *Conductors of insulated cables (IEC 60228:2004)*

EN 60332-1-2:2004, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame (IEC 60332-1-2:2004)*

EN 60811-401, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 401: Miscellaneous tests – Thermal ageing methods – Ageing in an air oven (IEC 60811-401)*

EN 60811-403, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 403: Miscellaneous tests – Ozone resistance test on cross-linked compounds (IEC 60811-403)*

EN 60811-404, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 404: Miscellaneous tests – Mineral oil immersion tests for sheaths (IEC 60811-404)*

EN 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds (IEC 60811-501)*

EN 60811-503, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 503: Mechanical tests - Shrinkage test for sheaths (IEC 60811-503)*

EN 60811-504, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 504: Mechanical tests - Bending tests at low temperature for insulation and sheaths (IEC 60811-504)*

EN 60811-505, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 505: Mechanical tests - Elongation at low temperature for insulations and sheaths (IEC 60811-505)*

EN 60811-506, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 506: Mechanical tests - Impact test at low temperature for insulations and sheaths (IEC 60811-506)*

EN 60811-507, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 507: Mechanical tests - Hot set test for cross-linked materials (IEC 60811-507)*

EN 61034-1, *Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus (IEC 61034-1)*

EN 61034-2, *Measurement of smoke density of cables burning under defined conditions – Part 2: Test procedure and requirements (IEC 61034-2)*

EN 62230:2007, *Electric cables – Spark-test method (IEC 62230:2006)*

HD 60364-5-52:2011, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

HD 60364-7-712, *Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems (IEC 60364-7-712)*

3 Terms and definitions

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

3.1

type tests (T)

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

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

3.2

sample tests (S)

tests made on samples of completed cable, or components taken from a completed cable adequate to verify that the finished product meets the design specifications

3.3

routine tests (R)

tests made on all production cable lengths to demonstrate their integrity

3.4

halogen-free material

material complying with the requirements of Annex B of EN 50525-1:2011