Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2 \text{ kV}$) up to 30 kV ($U_m = 36 \text{ kV}$) – Part 2: Cables for rated voltages from 6 kV ($U_m = 7,2 \text{ kV}$) up to 30 kV ($U_m = 36 \text{ kV}$)

This English-language version is derived from the original bilingual publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.
Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2 \text{kV}$) up to 30 kV ($U_m = 36 \text{kV}$) –

Part 2: Cables for rated voltages from 6 kV ($U_m = 7,2 \text{kV}$) up to 30 kV ($U_m = 36 \text{kV}$)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER CABLES WITH EXTRUDED INSULATION AND THEIR ACCESSORIES
FOR RATED VOLTAGES FROM 1 kV \((U_m = 1,2 \text{kV})\) UP TO 30 kV \((U_m = 36 \text{kV})\)

Part 2: Cables for rated voltages from 6 kV
\((U_m = 7,2 \text{kV})\) up to 30 kV \((U_m = 36 \text{kV})\)

FOREWORD

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International Standard IEC 60502-2 has been prepared by IEC technical committee 20: Electric cables.


Significant technical changes with respect to the first edition have been made. The changes relate to possible water ingress, large conductor sizes, partial discharge requirements, insulation and oversheath thickness requirements, range of type approval, electrical tests after installation and tabulated current ratings.
IEC 60502 consists of the following parts, under the general title *Power cables with extruded insulation and their accessories for rated voltages from 1 kV (U_m = 1,2 kV) up to 30 kV (U_m = 36 kV)*:

Part 1: Cables for rated voltages of 1 kV (U_m = 1,2 kV) and 3 kV (U_m = 3,6 kV);
Part 2: Cables for rated voltages from 6 kV (U_m = 7,2 kV) up to 30 kV (U_m = 36 kV);
Part 3: Reserved;
Part 4: Test requirements on accessories for cables with rated voltages from 6 kV (U_m = 7,2 kV) up to 30 kV (U_m = 36 kV).

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

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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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.
1 Scope

This part of IEC 60502 specifies the construction, dimensions and test requirements of power cables with extruded solid insulation from 6 kV up to 30 kV for fixed installations such as distribution networks or industrial installations.

When determining applications, it is recommended that the possible risk of radial water ingress is considered. Cable designs with barriers claimed to prevent longitudinal water penetration and an associated test are included in this part of IEC 60502.

Cables for special installation and service conditions are not included, for example cables for overhead networks, the mining industry, nuclear power plants (in and around the containment area) nor for submarine use or shipboard application.

2 Normative references

The following referenced documents are indispensable for the application 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.

- IEC 60038, IEC standard voltages
- IEC 60060-1, High-voltage test techniques – Part 1: General definitions and test requirements
- IEC 60183, Guide to the selection of high-voltage cables
- IEC 60228, Conductors of insulated cables
- IEC 60229, Tests on cable oversheaths which have a special protective function and are applied by extrusion
- IEC 60230, Impulse tests on cables and their accessories
- IEC 60332-1-2, 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 premixed flame
- IEC 60811-1-1, Common test methods for insulating and sheathing materials of electric cables and optical cables – Part 1-1: Methods for general application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties
IEC 60811-1-2, Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section 2: Thermal ageing methods

IEC 60811-1-3, Common test methods for insulating and sheathing materials of electric and optical cables – Part 1-3: General application – Methods for determining the density – Water absorption tests – Shrinkage test

IEC 60811-1-4, Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section 4: Test at low temperature

IEC 60811-2-1, Common test methods for insulating and sheathing materials of electric and optical cables – Part 2-1: Methods specific to elastomeric compounds – Ozone resistance, hot set and mineral oil immersion tests

IEC 60811-3-1, Common test methods for insulating and sheathing materials of electric cables – Part 3: Methods specific to PVC compounds – Section 1: Pressure test at high temperature – Tests for resistance to cracking

IEC 60811-3-2, Common test methods for insulating and sheathing materials of electric cables – Part 3: Methods specific to PVC compounds – Section 2: Loss of mass test – Thermal stability test

IEC 60811-4-1, Insulating and sheathing materials of electric and optical cables – Common test methods – Part 4-1: Methods specific to polyethylene and polypropylene compounds – Resistance to environmental stress cracking – Measurement of the melt flow index – Carbon black and/or mineral filler content measurement in polyethylene by direct combustion – Measurement of carbon black content by thermogravimetric analysis (TGA) – Assessment of carbon black dispersion in polyethylene using a microscope

IEC 60885-3, Electrical test methods for electric cables – Part 3: Test methods for partial discharge measurements on lengths of extruded power cables

IEC 60986, Short-circuit temperature limits of electric cables with rated voltages from 6 kV \( (U_m = 7.2 \text{ kV}) \) up to 30 kV \( (U_m = 36 \text{ kV}) \)

ISO 48, Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)