IEC 62893-4-1

Edition 1.0 2020-05

INTERNATIONAL STANDARD

Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV –
Part 4-1: Cables for DC charging according to mode 4 of IEC 61851-1 – DC charging without use of a thermal management system

IEC 62893-4-1:2020-05(en)

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CONTENTS

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CHARGING CABLES FOR ELECTRIC VEHICLES OF RATED VOLTAGES UP TO AND INCLUDING 0,6/1 kV –

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FOREWORD

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International Standard IEC 62893-4-1 has been prepared by IEC technical committee 20: Electric cables.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
20/1908/FDIS	20/1911/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This document is to be read in conjunction with IEC 62893-1:2017 and IEC 62893-2:2017.

A list of all parts in the IEC 62893 series, published under the general title *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

CHARGING CABLES FOR ELECTRIC VEHICLES OF RATED VOLTAGES UP TO AND INCLUDING 0,6/1 kV –

Part 4-1: Cables for DC charging according to mode 4 of IEC 61851-1 – DC charging without use of a thermal management system

1 Scope

This part of IEC 62893 applies to cables for DC charging according to mode 4 of IEC 61851-1. These cables are not intended to be used with a thermal management system such as that specified in IEC 61851-23.

Charging cables specified in IEC 62893 (all parts) are intended to be used for electrical appliances of class II equipment.

The maximum conductor operating temperature for the cables in this document is 90 °C.

The test methods specified are given in IEC 62893-2, IEC 60245-2, IEC 60332-1-2, IEC 62821-1:2015, Annex B and in the relevant parts of IEC 60811.

IEC 62440 is intended to be used as guidance on the safe use of cables in this document together with Clause 5 of this document.

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.

IEC 60227-2:1997, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 2: Test methods*

IEC 60245-2:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 2: Test methods*

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 pre-mixed flame*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60811-401:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 401: Miscellaneous tests – Thermal ageing methods – Ageing in an air oven*
IEC 60811-401:2012/AMD1:2017

IEC 61851-1, *Electric vehicle conductive charging system – Part 1: General requirements*

IEC 61851-23, *Electric vehicle conductive charging system – Part 23: DC electric vehicle charging station*

IEC 62440:2008, *Electrical cables with a rated voltage not exceeding 450/750 V – Guide to use*

IEC 62821-1:2015, *Electric cables – Halogen-free, low smoke, thermoplastic insulated and sheathed cables of rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 62893-1:2017, *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV – Part 1: General requirements*

IEC 62893-2:2017, *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV – Part 2: Test methods*

3 Terms and definitions

For the purposes of this document the terms and definitions given in IEC 62893-1 and the following apply.

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

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

3.1
auxiliary power core
core in the cable that is used to provide auxiliary power to operate on-vehicle electrical devices during the charging process without using battery power (e.g. climate control)

3.2
temperature sensor core
core in the cable that is used to provide temperature signals to operate an EVSE

4 General purpose cables – Heavy duty flexible cables

4.1 Code designation

The code designation is 62893 IEC 126 for halogen free cables with sheath compound EVM-1 and 62893 IEC 127 for halogen free cables with sheath compound EVM-2.

The code designation is 62893 IEC 128 for cables with sheath compound EVM-3.

4.2 Rated voltage

0,6/1 kV AC up to and including 1,5 kV DC.

4.3 Construction

4.3.1 Sizes of cable

The sizes of cable shall be:

- Power cores:

  4 mm^2 to 150 mm^2 – two or more cores.
- Control or pilot cores:

  Number not specified, for size see 8.2 d) of IEC 62893-1:2017.
- Optional PE conductor – one core: