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**Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Dimensional compatibility description for configuration FF AC/DC contact-tube vehicle coupler**

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**Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Dimensional compatibility description for configuration FF AC/DC contact-tube vehicle coupler**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE  
INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –  
DIMENSIONAL COMPATIBILITY DESCRIPTION FOR CONFIGURATION FF  
AC/DC CONTACT-TUBE VEHICLE COUPLER**

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IEC PAS 63472 has been processed by subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

Draft PAS	Report on voting
23H/517/DPAS	23H/519/RVDPAS

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## INTRODUCTION

With the increasing success of electromobility, more and more use cases and usage situations are emerging. Some of these usage situations could not be foreseen when the charging accessories were developed. There were also constraints in the development of the Combined Charging System resulting from the use of the existing AC connectors.

In order not to impair the user experience and the further successful introduction of electromobility, there is an urgent need for action. To this end, this document describes optional measures that are suitable for supporting the reliability of the connector even in charging situations with non-axial constraint of the charging line. These optional measures are limited to the connector to allow easy implementation for new products and easy retrofitting of existing products. Plug-in compatibility with inlets designed in accordance with standards is thus still ensured.

It is planned to implement the measures described and, if necessary, further measures in the further development of IEC 62196-3. This will be coordinated with IEC SC23H MT8.

It is intended to withdraw this document once the content has been incorporated into an IEC 62196-3 document.

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# PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES – DIMENSIONAL COMPATIBILITY DESCRIPTION FOR CONFIGURATION FF AC/DC CONTACT-TUBE VEHICLE COUPLER

## 1 Scope

This document describes dimensional options for CONFIGURATION FF AC/DC contact-tube vehicle couplers as defined in IEC 62196-3. These possibilities serve to improve the reliability of a mated connection when the charging cable is not axially constrained. The options can be implemented optionally and maintain mating compatibility with CONFIGURATION FF according to IEC 62196-3.

## 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 62196-1:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 1: General requirements*

IEC 62196-3:2022, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 3: Dimensional compatibility requirements for DC and AC/DC pin and contact-tube vehicle couplers*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62196-3:2022 apply.

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

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

## 4 General

Clause 4 of IEC 62196-3:2022 applies.

## 5 Ratings

Clause 5 of IEC 62196-3:2022 applies.

## 6 Connection between the power supply and the electric vehicle

Clause 6 of IEC 62196-3:2022 applies.

## **7 Classification of accessories**

Clause 7 of IEC 62196-3:2022 applies.

## **8 Marking**

Clause 8 of IEC 62196-3:2022 applies.

## **9 Dimensions**

Clause 9 of IEC 62196-3:2022 applies.

## **10 Protection against electric shock**

Clause 10 of IEC 62196-3:2022 applies.

## **11 Size and colour of protective earthing and neutral conductors**

Clause 11 of IEC 62196-3:2022 applies.

## **12 Provisions for earthing**

Clause 12 of IEC 62196-3:2022 applies.

## **13 Terminals**

Clause 13 of IEC 62196-3:2022 applies.

## **14 Interlocks**

Clause 14 of IEC 62196-3:2022 applies.

## **15 Resistance to ageing of rubber and thermoplastic material**

Clause 15 of IEC 62196-3:2022 applies.

## **16 General construction**

Clause 16 of IEC 62196-3:2022 applies.

## **17 Construction of EV socket-outlets – General**

Clause 17 of IEC 62196-3:2022 applies.

## **18 Construction of EV plugs and vehicle connectors**

Clause 18 of IEC 62196-3:2022 applies.

## **19 Construction of vehicle inlets**

Clause 19 of IEC 62196-3:2022 applies.

## **20 Degrees of protection**

Clause 20 of IEC 62196-3:2022 applies.

## **21 Insulation resistance and dielectric strength**

Clause 21 of IEC 62196-3:2022 applies.

## **22 Breaking capacity**

Clause 22 of IEC 62196-3:2022 applies.

## **23 Normal operation**

Clause 23 of IEC 62196-3:2022 applies.

## **24 Temperature rise**

Clause 24 of IEC 62196-3:2022 applies.

## **25 Flexible cables and their connection**

Clause 25 of IEC 62196-3:2022 applies.

## **26 Mechanical strength**

Clause 26 of IEC 62196-3:2022 applies.

## **27 Screws, current-carrying parts and connections**

Clause 27 of IEC 62196-3:2022 applies.

## **28 Creepage distances, clearances and distances through sealing compound**

Clause 28 of IEC 62196-3:2022 applies.

## **29 Resistance to heat and to fire**

Clause 29 of IEC 62196-3:2022 applies.

## **30 Corrosion and resistance to rusting**

Clause 30 of IEC 62196-3:2022 applies.

### **31 Conditional short-circuit current**

Clause 31 of IEC 62196-3:2022 applies.

### **32 Electromagnetic compatibility**

Clause 32 of IEC 62196-3:2022 applies.

### **33 Vehicle drive over**

Clause 33 of IEC 62196-3:2022 applies.

### **34 Thermal cycling**

Clause 34 of IEC 62196-3:2022 applies.

### **35 Humidity exposure**

Clause 35 of IEC 62196-3:2022 applies.

### **36 Misalignment**

Clause 36 of IEC 62196-3:2022 applies.

### **37 Contact endurance test**

Clause 37 of IEC 62196-3:2022 applies.

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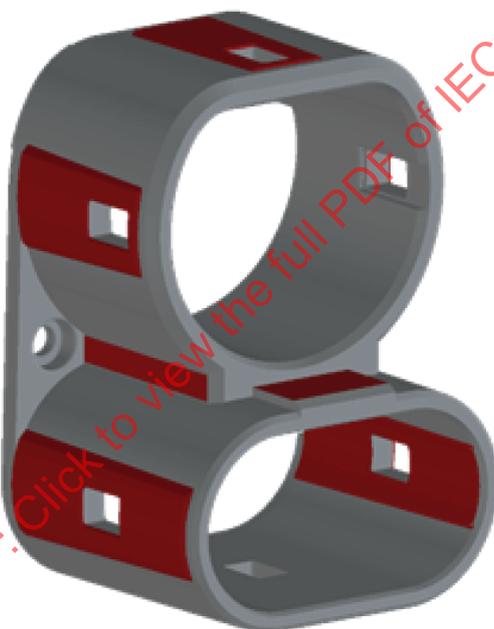
**CONFIGURATION FF**  
**VEHICLE COUPLER 1 000 V DC**  
**AND UP TO 400 A**  
**ALL MODES**

CONFIGURATION FF of IEC 62196-3:2022 applies, except as follows.

*Additional sheet:*

**SUPPLEMENT DESCRIPTION**

The sheet describes optional bulges on the outer shell of the vehicle connector in order to improve the interlocking and to reduce the possible movement between the vehicle connector and the vehicle inlet to a minimum.



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