IEC 61496-1

Edition 4.0 2020-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Safety of machinery – Electro-sensitive protective equipment –
Part 1: General requirements and tests

Sécurité des machines – Équipements de protection électrosensibles –
Partie 1: Exigences générales et essais

IEC 61496-1:2020-07(en-fr)

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY OF MACHINERY – ELECTRO-SENSITIVE PROTECTIVE EQUIPMENT –

Part 1: General requirements and tests

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61496-1 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

This fourth edition cancels and replaces the third edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) It has been clarified that some requirements for ESPEs that are dependent on sensing technology are not included in IEC 61496-1. They are provided in a subsequent part of IEC 61496.
b) Requirements for protection against environmental influences from subsequent parts of IEC 61496 that are common to all ESPEs have been consolidated into IEC 61496-1.

c) Some test procedures in IEC 61496-1 were incomplete. They have been expanded with more detail and step by step procedures.

d) Some requirements and procedures in IEC 61496-1 are now covered by new generic machine safety standards. The requirements in IEC 61496-1 have been harmonized with references to the new generic standards.

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

FDIS	Report on voting
44/874/FDIS	44/877/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.

A list of all the parts in the IEC 61496 series, published under the general title *Safety of machinery – Electro-sensitive protective equipment*, 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.

INTRODUCTION

An electro-sensitive protective equipment (ESPE) is applied to machinery presenting a risk of personal injury. It provides protection by causing the machine to revert to a safe condition before a person can be placed in a hazardous situation.

This document provides general design and performance requirements of ESPEs for use over a broad range of applications. Essential features of equipment meeting the requirements of this document are the appropriate level of safety-related performance provided and the built-in periodic functional checks/self-checks that are specified to ensure that this level of performance is maintained.

Each type of machine presents its own particular hazards and it is not the purpose of this document to recommend the manner of application of the ESPE to any particular machine. The application of the ESPE is a matter for agreement between the equipment supplier, the machine user and the enforcing authority, and in this context attention is drawn to the relevant guidance established internationally, for example ISO 12100.

This document specifies technical requirements of electro-sensitive protective equipment. The application of this document may require the use of substances and/or test procedures that could be injurious to health unless adequate precautions are taken. Conformance with this document in no way absolves either the supplier or the user from statutory obligations relating to the safety and health of persons during the use of the equipment covered by this document.

The requirements of this document are highly dependent on analysis and expertise in specific test and measurement techniques. In order to provide a high level of confidence, independent review is recommended.

SAFETY OF MACHINERY – ELECTRO-SENSITIVE PROTECTIVE EQUIPMENT –

Part 1: General requirements and tests

1 Scope

This part of IEC 61496 specifies general requirements for the design, construction and testing of non-contact electro-sensitive protective equipment (ESPE) designed specifically to detect persons or part of a person as part of a safety-related system. Special attention is directed to functional and design requirements that ensure an appropriate safety-related performance is achieved. An ESPE can include optional safety-related functions, the requirements for which are given in Annex A.

NOTE "Non-contact" means that physical contact is not required for sensing.

This document is intended to be used with a subsequent part of IEC 61496 that provides particular requirements based on the sensing technology.

EXAMPLE This document and IEC 61496-2 are used for AOPDs; this document and IEC 61496-3 are used for AOPDDRs.

Where a part covering the sensing technology does not exist, IEC TS 62998-1 is used.

Where the IEC 61496 series does not contain all necessary provisions, IEC TS 62998-1 is used.

It is an additional possibility to combine those aspects covered by the IEC 61496 series in addition to IEC TS 62998-1.

This document does not specify the dimensions or configuration of the detection zone and its disposition in relation to hazards in any particular application, nor what constitutes a hazardous state of any machine. It is restricted to the functioning of the ESPE and how it interfaces with the machine.

While a data interface can be used to control optional safety-related ESPE functions (Annex A), this document does not provide specific requirements. Requirements for these safety-related functions can be determined by consulting other standards (for example, IEC 61508 (all parts), IEC 62046, IEC 62061, and ISO 13849-1).

This document can be relevant to applications other than those for the protection of persons, for example for the protection of machinery or products from mechanical damage. In those applications, different requirements can be appropriate, for example when the materials that have to be recognized by the sensing function have different properties from those of persons.

This document does not deal with requirements for ESPE functions not related to the protection of persons (e.g. using sensing unit data for navigation).

This document does not deal with electromagnetic compatibility (EMC) emission requirements.