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Irish Standard  
I.S. EN 61496-2:2013

# Safety of machinery - Electro-sensitive protective equipment -- Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)

**I.S. EN 61496-2:2013**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
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**EN 61496-2**

December 2013

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English version

**Safety of machinery -**  
**Electro-sensitive protective equipment -**  
**Part 2: Particular requirements for equipment**  
**using active opto-electronic protective devices (AOPDs)**  
**(IEC 61496-2:2013)**

Sécurité des machines -  
Equipements de protection électro-sensibles -  
Partie 2: Exigences particulières à un  
équipement utilisant des appareils protecteurs  
optoélectroniques actifs (AOPD)  
(CEI 61496-2:2013)

Sicherheit von Maschinen -  
Berührungslos wirkende Schutzeinrichtungen -  
Teil 2: Besondere Anforderungen an  
Einrichtungen, welche nach dem aktiven opto-  
elektronischen Prinzip arbeiten  
(IEC 61496-2:2013)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## **Foreword**

The text of document 44/651/CDV, future edition 3 of IEC 61496-2, prepared by IEC/TC 44 "Safety of machinery - Electrotechnical aspects" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61496-2:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-06-13
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-07-12

This document supersedes CLC/TS 61496-2:2006.

EN 61496-2:2013 includes the following significant technical changes with respect to CLC/TS 61496-2:2006:

- requirements have been corrected and made easier to understand;
- test procedures have been revised to make them easier to perform and to improve repeatability;
- guidance is provided for the evaluation and verification of AOPDs using design techniques for which the test procedures of this part are not sufficient.

This standard is to be used in conjunction with EN 61496-1:2013.

This part supplements or modifies the corresponding clauses in EN 61496-1.

Where a particular clause or subclause of Part 1 is not mentioned in this Part 2, that clause or subclause applies as far as is reasonable. Where this part states "addition", "modification" or "replacement", the relevant text of Part 1 is adapted accordingly.

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## Annex ZA

(normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60825-1	2007	Safety of laser products - Part 1: Equipment classification and requirements	EN 60825-1	2007
IEC 61496-1	2012	Safety of machinery - Electro-sensitive protective equipment Part 1: General requirements and tests	EN 61496-1	2013
IEC 62471	-	Photobiological safety of lamps and lamp systems	EN 62471	-
ISO 13855	-	Safety of machinery - Positioning of protective equipment with respect to the approach speeds of parts of the human body	EN ISO 13855	-
-	-	High-visibility warning clothing for professional use - Test methods and requirements	EN 471	2003

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**IEC 61496-2**

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# **INTERNATIONAL STANDARD**

## **NORME INTERNATIONALE**



**Safety of machinery – Electro-sensitive protective equipment –  
Part 2: Particular requirements for equipment using active opto-electronic  
protective devices (AOPDs)**

**Sécurité des machines – Équipements de protection électro-sensibles –  
Partie 2: Exigences particulières à un équipement utilisant des appareils  
protecteurs optoélectroniques actifs (AOPD)**



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Edition 3.0 2013-01

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Safety of machinery – Electro-sensitive protective equipment –  
Part 2: Particular requirements for equipment using active opto-electronic  
protective devices (AOPDs)**

**Sécurité des machines – Équipements de protection électro-sensibles –  
Partie 2: Exigences particulières à un équipement utilisant des appareils  
protecteurs optoélectroniques actifs (AOPD)**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### **SAFETY OF MACHINERY – ELECTRO-SENSITIVE PROTECTIVE EQUIPMENT –**

#### **Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)**

### FOREWORD

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International Standard IEC 61496-2 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects, in collaboration with CENELEC technical committee 44X: Safety of machinery – Electrotechnical aspects.

This third edition cancels and replaces the second edition published in 2006. It constitutes a technical revision.

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

- a) Requirements have been corrected and made easier to understand.
- b) Test procedures have been revised to make them easier to perform and to improve repeatability.
- c) Guidance is provided for the evaluation and verification of AOPDs using design techniques for which the test procedures of this part are not sufficient.

This standard has the status of a product family standard and may be used as a normative reference in a dedicated product standard for the safety of machinery.

This standard is to be used in conjunction with IEC 61496-1:2012.

This part supplements or modifies the corresponding clauses in IEC 61496-1.

Where a particular clause or subclause of Part 1 is not mentioned in this Part 2, that clause or subclause applies as far as is reasonable. Where this part states "addition", "modification" or "replacement", the relevant text of Part 1 is adapted accordingly.

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

CDV	Report on voting
44/651/CDV	44/670/RVC

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.

A list of all 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 publication will remain unchanged until the stability 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.

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## INTRODUCTION

Electro-sensitive protective equipment (ESPE) is applied to machinery that presents 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 part of IEC 61496 provides particular requirements for the design, construction and testing of electro-sensitive protective equipment (ESPE) for the safeguarding of machinery, employing active opto-electronic protective devices (AOPDs) for the sensing function.

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

Due to the complexity of the technology of ESPEs there are many issues that are highly dependent on analysis and expertise in specific test and measurement techniques. In order to provide a high level of confidence, independent review by relevant expertise is recommended.

## **SAFETY OF MACHINERY – ELECTRO-SENSITIVE PROTECTIVE EQUIPMENT –**

### **Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)**

#### **1 Scope**

This clause of Part 1 is replaced by the following:

This part of IEC 61496 specifies requirements for the design, construction and testing of electro-sensitive protective equipment (ESPE) designed specifically to detect persons as part of a safety-related system, employing active opto-electronic protective devices (AOPDs) for the sensing function. Special attention is directed to features which ensure that an appropriate safety-related performance is achieved. An ESPE may include optional safety-related functions, the requirements for which are given in Annex A of IEC 61496-1:2012 and of this part.

This part of IEC 61496 does not specify the dimensions or configurations of the detection zone and its disposition in relation to hazardous parts for 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.

Excluded from this part are AOPDs employing radiation at wavelengths outside the range 400 nm to 1500 nm.

This part of IEC 61496 may be relevant to applications other than those for the protection of persons, for example, the protection of machinery or products from mechanical damage. In those applications, additional requirements may be necessary, for example, when the materials that are to be recognized by the sensing function have different properties from those of persons.

This part of IEC 61496 does not deal with EMC emission requirements.

#### **2 Normative references**

This clause of Part 1 is applicable except as follows:

*Additional references:*

IEC 60825-1:2007, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 61496-1:2012, *Safety of machinery – Electro-sensitive protective equipment – Part 1: General requirements and tests*

IEC 62471, *Photobiological safety of lamps and lamp systems*

ISO 13855, *Safety of machinery – Positioning of safeguards with respect to the approach speeds of parts of the human body*

EN 471:2003, *High-visibility warning clothing for professional use – Test methods and requirements*.

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