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IEC 61010-2-202

Edition 2.0 2020-11  
REDLINE VERSION

# INTERNATIONAL STANDARD



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**Safety requirements for electrical equipment for measurement, control  
and laboratory use –  
Part 2-202: Particular requirements for electrically operated valve actuators**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 13.110; 17.020; 19.020

ISBN 978-2-8322-9044-6

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### **SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE –**

#### **Part 2-202: Particular requirements for electrically operated valve actuators**

#### 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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International Standard IEC 61020-2-202 has been prepared by committee TC 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

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

- a) the scope has been clarified in relationship with other IEC standards,
- b) additional requirement for identification has been included,
- c) additional requirement for user documentations has been included,
- d) accuracy of high voltage di-electric tester has been specified,
- e) conformity statement for mechanical tests has been clarified.

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

FDIS	Report on voting
65/835/FDIS	65/844/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 Part 2-202 is to be used in conjunction with third edition of IEC 61010-1:2010, including its Amendment 1:2016.

This Part 2-202 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for electrically operated valve actuators*.

Where a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this part states "addition", "modification", "replacement", or "deletion", the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

A list of all parts in the IEC 61010 series, published under the general title *Safety requirements for electrical equipment for measurement, control and laboratory use*, can be found on the IEC website.

In this standard:

- 1) the following print types are used:
  - requirements: in roman type;
  - NOTES: in smaller roman type;
  - conformity and test: *in italic type*;
  - terms used throughout this standard which have been defined in clause 3: SMALL ROMAN CAPITALS;
- 2) subclauses, figures, tables and notes which are additional to those in part 1 are numbered starting from 101. Additional annexes are lettered starting from AA.

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.

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## INTRODUCTION

This IEC 61010-2-202 document constitutes Part 2-202 of a planned series of standards on industrial-process measurement, control and automation equipment.

Safety terms of general use are defined in IEC 61010-1. More specific terms are defined in each part.

This part incorporates the safety related requirements of electrically operated valve ACTUATORS and SOLENOIDS.

This document does not cover functional safety aspects of electrically operated ACTUATORS and SOLENOIDS.

# SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE –

## Part 2-202: Particular requirements for electrically operated valve actuators

### 1 Scope and object

This clause of Part 1 is applicable, except as follows:

#### 1.1 Scope

##### 1.1.1 Equipment included in scope

*Replacement of the text by the following paragraphs:*

This part of IEC 61010 specifies the safety requirements for electric ACTUATORS and SOLENOIDS, as applied to valves, intended to be installed in an industrial process or discrete control environment.

This part of IEC 61010 specifies:

- particular safety requirements for general purpose electrically operated valve ACTUATORS and SOLENOIDS,
- related verification tests.

~~The general purpose electrically operated valve ACTUATORS and SOLENOIDS, covered by this part of IEC 61010 are limited to:~~

~~— those rated 600 V alternative current/ 840 V direct current or less;~~

~~Service personnel interface to equipment included in the scope of this document.~~

##### 1.1.2 Equipment excluded from scope

*Addition at the end of the list:*

This standard excludes:

~~— electric ACTUATORS and SOLENOIDS for use in explosive atmospheres, as covered by the IEC 60079 series of standards;~~

~~— mechanical parts/aspects of valves;~~

~~— ACTUATORS and SOLENOIDS performing a safety function as covered by the IEC 61508 series of standards;~~

~~— POSITIONERS.~~

aa) electric ACTUATORS and SOLENOIDS for use in domestic or commercial applications;

NOTE 1 These are covered by other IEC or ISO standards, such as IEC 60730, etc.

bb) electric ACTUATORS and SOLENOIDS performing a safety function;

NOTE 2 These are covered by other IEC or ISO standards, such as IEC 61508, etc.

cc) positioners.

NOTE 3 A positioner is defined as a "physical unit delivering an additional, often mechanical, feedback to a mechanical final controlling element that improves its velocity and precision" in IEC 60050-351:2013, 351-56-17.

## 1.2 Object

### 1.2.2 Aspects excluded from scope

*Addition at the end of the list:*

aa) mechanical parts/aspects of valves.

#### 1.2.101 Aspects included in other applicable standards

Where electric ACTUATORS and SOLENOIDS are required to comply with requirements of other IEC or ISO standards, aspects fully covered in these standards can replace requirements as given in IEC 61010-1.

Where aspects covered in IEC 61010-1 are not fully covered in these IEC or ISO standards, tests of IEC 61010-1 shall be conducted as far to ensure that no HAZARD can occur in NORMAL or in SINGLE FAULT CONDITION.

NOTE IEC 61010-1:2010, Figure 15 of 14.1 gives a general overview of dealing with components within the scope of other IEC or ISO standards. A similar approach can be used for equipment and sub-assemblies. Example – Clauses 8 and 9.1 to 9.5 can generally be considered sufficiently covered where IEC 60079 has been applied.

## 2 Normative references

~~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.~~

This clause of Part 1 is applicable, ~~except as follows:~~

~~No additional references are needed for this document.~~



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

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**Safety requirements for electrical equipment for measurement, control  
and laboratory use –  
Part 2-202: Particular requirements for electrically operated valve actuators**

**Exigences de sécurité pour appareils électriques de mesurage, de regulation  
et de laboratoire –  
Partie 2-202: Exigences particulières pour les actionneurs à vanne à commande  
électrique**



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## **2 Normative references**

This clause of Part 1 is applicable.

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## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

### EXIGENCES DE SÉCURITÉ POUR APPAREILS ÉLECTRIQUES DE MESURAGE, DE REGULATION ET DE LABORATOIRE –

#### Partie 2-202: Exigences particulières pour les actionneurs à vanne à commande électrique

#### AVANT-PROPOS

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La Norme internationale IEC 61020-2-202 a été établie par le CE 65: Mesure, commande et automation dans les processus industriels.

Cette deuxième édition annule et remplace la première édition parue en 2016. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) le domaine d'application a été clarifié en relation avec d'autres normes IEC,
- b) une exigence supplémentaire relative à l'identification a été ajoutée,

- c) une exigence supplémentaire relative aux documentations utilisateur a été ajoutée,
- d) l'exactitude du générateur de haute tension diélectrique a été spécifiée,
- e) la déclaration de conformité pour les essais mécaniques a été clarifiée.

Le texte de cette Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
65/835/FDIS	65/844/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

La présente partie 2-202 doit être utilisée conjointement avec la troisième édition de l'IEC 61010-1:2010, y compris son amendement 1:2016.

La présente partie 2-202 complète ou modifie les articles correspondants de l'IEC 61010-1 de façon à transformer cette publication en norme IEC: *Exigences particulières pour les actionneurs à vanne à commande électrique*

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette partie 2, ce paragraphe s'applique dans la mesure du raisonnable. Lorsque la présente partie spécifie "addition", "modification", "remplacement" ou "suppression", il convient d'adapter en conséquence l'exigence, la modalité d'essai ou la note correspondante de la Partie 1.

Une liste de toutes les parties de la série IEC 61010, publiées sous le titre général *Exigences de sécurité pour appareils électriques de mesure, de régulation et de laboratoire*, peut être consultée sur le site web de l'IEC.

Dans la présente norme:

- 1) les caractères d'imprimerie suivants sont utilisés:
  - exigences proprement dites: caractères romains;
  - NOTES: petits caractères romains;
  - conformité et essai: *caractères italiques*;
  - termes définis à l'Article 3 et utilisés dans toute cette norme: PETITES MAJUSCULES EN CARACTERES ROMAINS;
- 2) les paragraphes, figures, tableaux et notes qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101. Les annexes supplémentaires sont numérotées à partir de AA.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "http://webstore.iec.ch" dans les données relatives au document recherché. A cette date, le document sera

- reconduit,
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- amendé.

## INTRODUCTION

Le présent document IEC 61010-2-202 constitue la Partie 2-202 d'une série de normes planifiées sur les appareils de mesure, commande et automation dans les processus industriels.

Les termes de sécurité d'usage général sont définis dans l'IEC 61010-1. Des termes plus spécifiques sont définis dans chaque partie.

Cette partie contient les exigences relatives à la sécurité des ACTIONNEURS et SOLENOÏDES à vanne à commande électrique.

Le présent document ne couvre pas les aspects de sécurité fonctionnelle des ACTIONNEURS et SOLENOÏDES à commande électrique.

## EXIGENCES DE SÉCURITÉ POUR APPAREILS ÉLECTRIQUES DE MESURAGE, DE REGULATION ET DE LABORATOIRE –

### Partie 2-202: Exigences particulières pour les actionneurs à vanne à commande électrique

#### 1 Domaine d'application et objet

L'article de la Partie 1 s'applique avec l'exception suivante:

##### 1.1 Domaine d'application

###### 1.1.1 Appareils inclus dans le domaine d'application

*Remplacer le texte par les alinéas suivants:*

La présente partie de l'IEC 61010 spécifie les exigences de sécurité relatives aux ACTIONNEURS et SOLENOÏDES électriques, telles qu'appliquées aux vannes, destinés à être installés dans un environnement de processus industriel ou de commande discrète.

La présente partie de l'IEC 61010 spécifie:

- les exigences de sécurité particulières des ACTIONNEURS et SOLENOÏDES à vanne à commande électrique à usage général,
- les essais de vérification associés.

###### 1.1.2 Appareils exclus du domaine d'application

*Ajouter à la fin de la liste:*

La présente norme exclut:

- aa) les ACTIONNEURS et SOLENOÏDES électriques utilisés dans des applications domestiques ou commerciales;

NOTE 1 Ces éléments sont couverts par d'autres normes IEC ou ISO, comme l'IEC 60730, etc.

- bb) les ACTIONNEURS et SOLENOÏDES électriques réalisant une fonction de sécurité;

NOTE 2 Ces éléments sont couverts par d'autres normes IEC ou ISO, comme l'IEC 61508, etc.

- cc) les positionneurs.

NOTE 3 Un positionneur est défini comme étant une "unité physique qui délivre un retour additionnel, souvent mécanique, à un élément de commande final mécanique qui améliore sa vitesse et précision" dans l'IEC 60050-351:2013, 351-56-17.

#### 1.2 Objet

##### 1.2.2 Aspects exclus du domaine d'application

*Ajouter à la fin de la liste:*

- aa) les parties/aspects mécaniques des vannes.

### **1.2.101 Aspects inclus dans d'autres normes applicables**

Lorsque la conformité des ACTIONNEURS ET SOLENOÏDES électriques aux exigences d'autres normes IEC ou ISO est exigée, les aspects entièrement couverts dans ces normes peuvent remplacer les exigences de l'IEC 61010-1.

Lorsque les aspects couverts dans l'IEC 61010-1 ne sont pas entièrement couverts dans ces normes IEC ou ISO, les essais de l'IEC 61010-1 doivent être effectués de manière à assurer qu'aucun danger ne puisse se produire en CONDITIONS NORMALES ou en CONDITIONS DE PREMIER DÉFAUT.

NOTE La Figure 15 en 14.1 de l'IEC 61010-1:2010 donne un aperçu général de la façon de traiter les composants relevant du domaine d'application d'autres normes IEC ou ISO. Une approche similaire peut être utilisée pour les appareils et les sous-ensembles. Exemple - Les Articles 8 et 9.1 à 9.5 peuvent généralement être considérés comme suffisamment couverts lorsque la norme IEC 60079 a été appliquée.

## **2 Références normatives**

L'article de la Partie 1 s'applique.