

Dit document mag slechts op een stand-alone PC worden geïnstalleerd. Gebruik op een netwerk is alleen toestaan als een aanvullende licentieovereenkomst voor netwerkgebruik met NEN is afgesloten.
This document may only be used on a stand-alone PC. Use in a network is only permitted when a supplementary license agreement for us in a network with NEN has been concluded.

Nederlandse norm

NEN-EN-ISO 10218-1 (en)

Robots and robotic devices - Safety requirements - Part 1: Industrial robots (ISO 10218-1:2011, IDT)

Vervangt NEN-EN-ISO 10218-1:2009;
NEN-EN-ISO 10218-1:2009 Ontw.

ICS 25.040.30

juli 2011

Als Nederlandse norm is aanvaard:

- EN ISO 10218-1:2011, IDT
- ISO 10218-1:2011, IDT

Normcommissie 381184 "Automation systems and integration"



THIS PUBLICATION IS COPYRIGHT PROTECTED

DEZE PUBLICATIE IS AUTEURSRECHTELJK BESCHERMD

Apart from exceptions provided by the law, nothing from this publication may be duplicated and/or published by means of photocopy, microfilm, storage in computer files or otherwise, which also applies to full or partial processing, without the written consent of the Netherlands Standardization Institute.

The Netherlands Standardization Institute shall, with the exclusion of any other beneficiary, collect payments owed by third parties for duplication and/or act in and out of law, where this authority is not transferred or falls by right to the Reproduction Rights Foundation.

Auteursrecht voorbehouden. Behoudens uitzondering door de wet gesteld mag zonder schriftelijke toestemming van het Nederlands Normalisatie-instituut niets uit deze uitgave worden vervaardigd en/of openbaar gemaakt door middel van fotokopie, microfilm, opslag in computerbestanden of anderszins, hetgeen ook van toepassing is op gehele of gedeeltelijke bewerking.

Het Nederlands Normalisatie-instituut is met uitsluiting van ieder ander gerechtigd de door derden verschuldigde vergoedingen voor vervaardiging te innen en/of daartoe in en buiten rechte op te treden, voor zover deze bevoegdheid niet is overgedragen c.q. rechtens toekomt aan de Stichting Reprorecht.

Although the utmost care has been taken with this publication, errors and omissions cannot be entirely excluded. The Netherlands Standardization Institute and/or the members of the committees therefore accept no liability, not even for direct or indirect damage, occurring due to or in relation with the application of publications issued by the Netherlands Standardization Institute.

Hoewel bij deze uitgave de uiterste zorg is nagestreefd, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het Nederlands Normalisatie-instituut en/of de leden van de commissies aanvaarden derhalve geen enkele aansprakelijkheid, ook niet voor directe of indirecte schade, ontstaan door of verband houdend met toepassing van door het Nederlands Normalisatie-instituut gepubliceerde uitgaven.

Nederlands voorwoord

Voor de in deze norm vermelde normatieve verwijzingen bestaan in Nederland de volgende equivalenten:

<u>vermelde norm</u>	<u>Nederlandse norm</u>	<u>titel</u>
ISO 9283:1998	NEN-EN-ISO 9283:1998	Industriële robots - Prestatie-eisen en bijbehorende beproefingsmethoden
ISO 10218-2	-	-
ISO 12100	NEN-EN-ISO 12100	Veiligheid van machines - Basisbegrippen voor ontwerp - Risicobeoordeling en risicoreductie
ISO 13849-1:2006	NEN-EN-ISO 13849-1:2008	Veiligheid van machines - Onderdelen van besturingssystemen met een veiligheidsfunctie - Deel 1: Algemene regels voor ontwerp
ISO 13850	NEN-EN-ISO 13850	Veiligheid van machines - Noodstop - Ontwerpbeginselementen
IEC 60204-1	NEN-EN-IEC 60204-1	Veiligheid van machines - Elektrische uitrusting van machines - Deel 1: Algemene eisen
IEC 62061:2005	-	-

Preview
norm
standaard

Voorbeeld
Preview

EUROPEAN STANDARD

EN ISO 10218-1

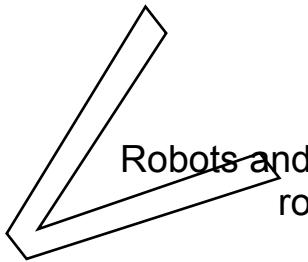
NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2011

ICS 25.040.30

Supersedes EN ISO 10218-1:2008



English Version

Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots (ISO 10218-1:2011)

Robots et dispositifs robotiques - Exigences de sécurité pour les robots industriels - Partie 1: Robots (ISO 10218-1:2011)

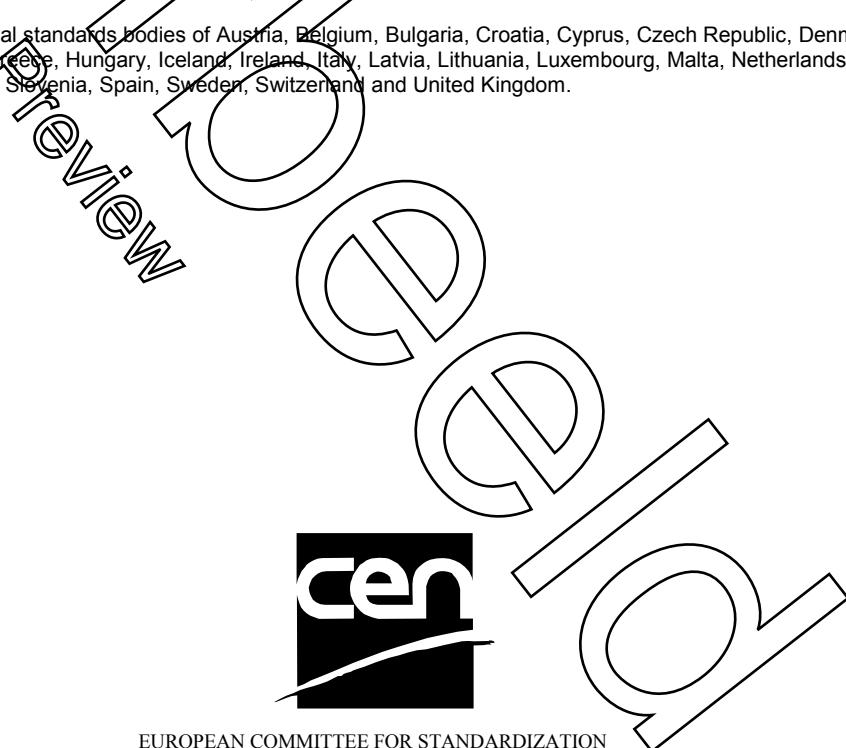
Industrieroboter - Sicherheitsanforderungen - Teil 1: Roboter (ISO 10218-1:2011)

This European Standard was approved by CEN on 21 April 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

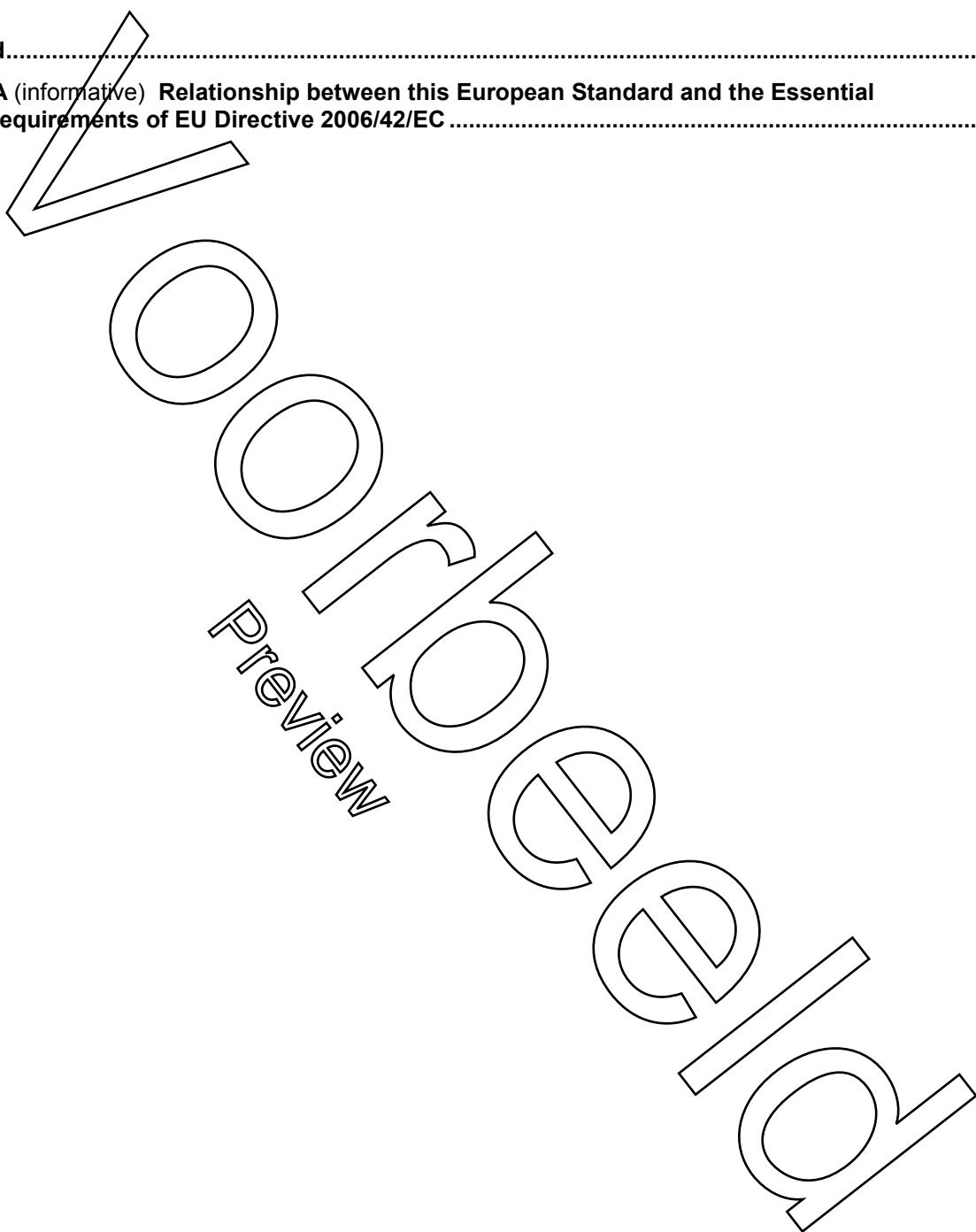


EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword.....	3
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC	4



Foreword

This document (EN ISO 10218-1:2011) has been prepared by Technical Committee ISO/TC 184 "Automation systems and integration" in collaboration with Technical Committee CEN/TC 310 "Advanced automation technologies and their applications" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2012, and conflicting national standards shall be withdrawn at the latest by January 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 10218-1:2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

The text of ISO 10218-1:2011 has been approved by CEN as a EN ISO 10218-1:2011 without any modification.

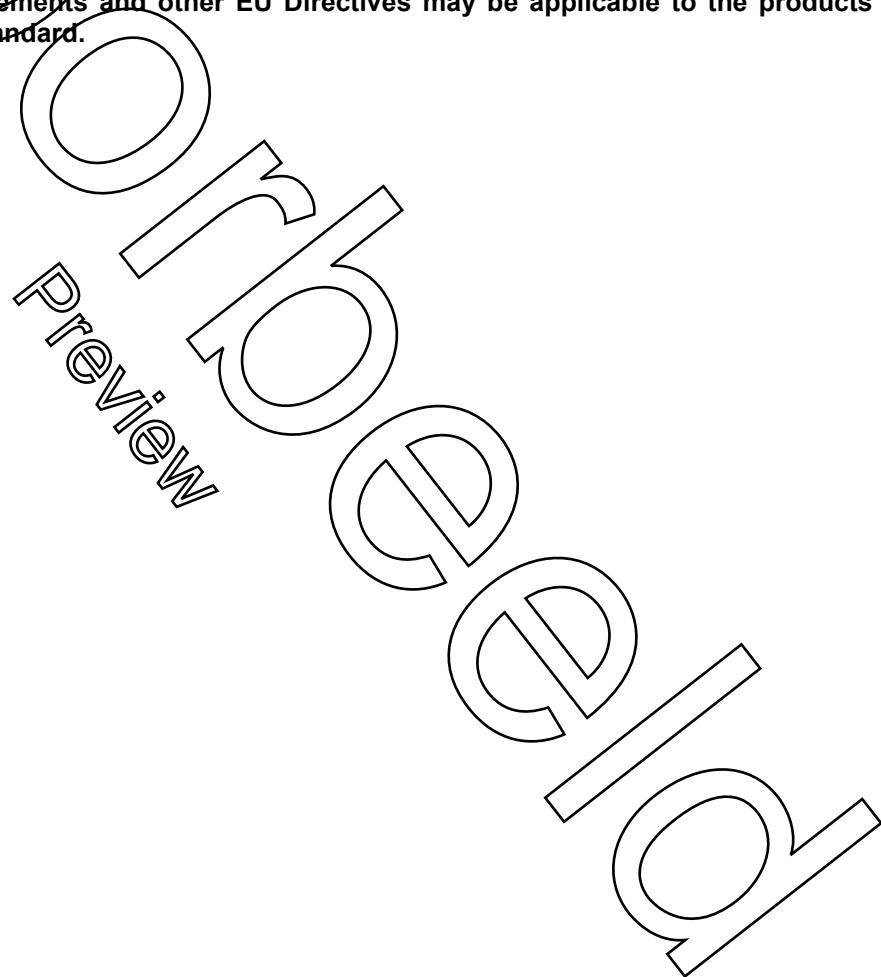
Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide one means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

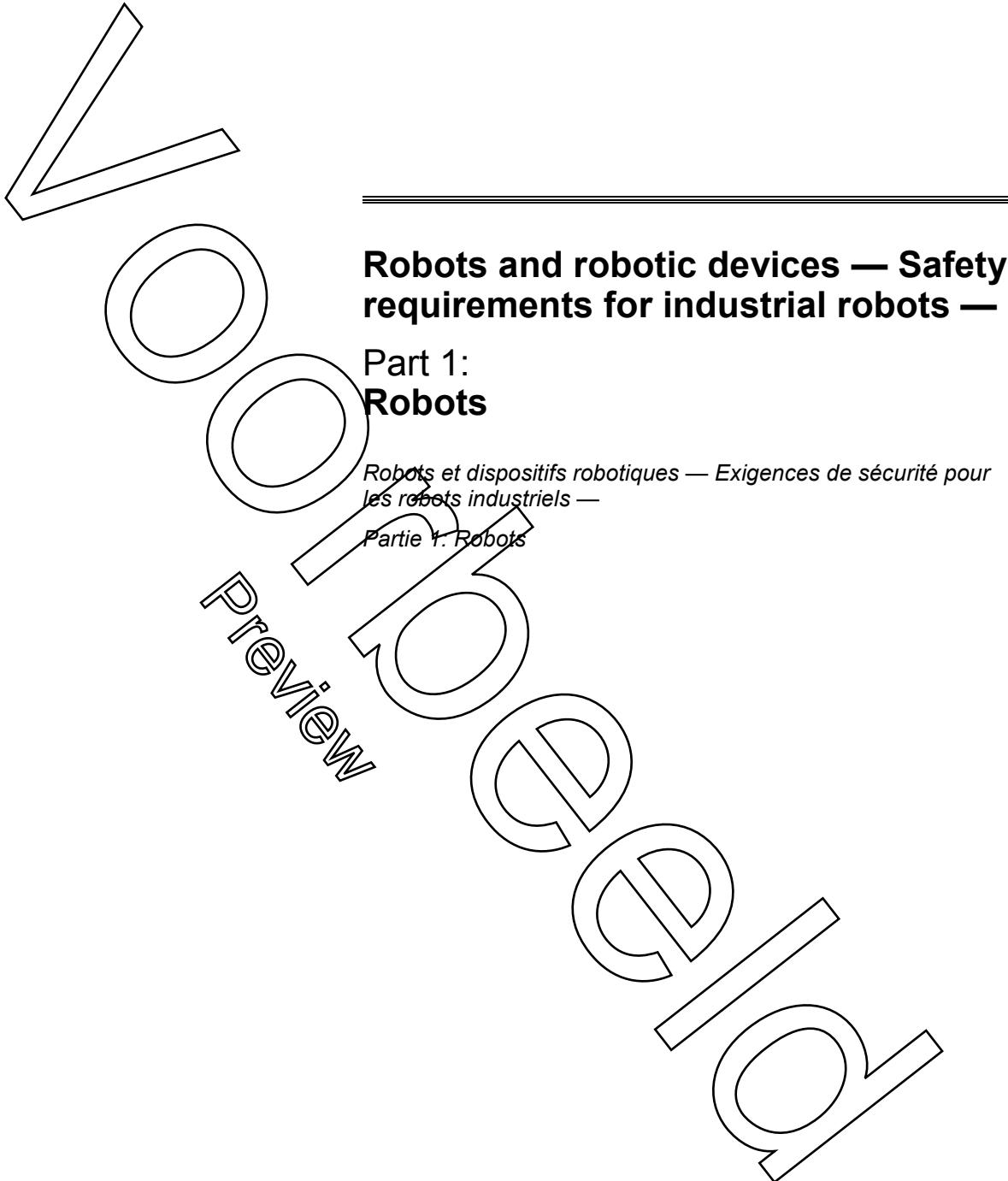
WARNING — Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.



INTERNATIONAL
STANDARD

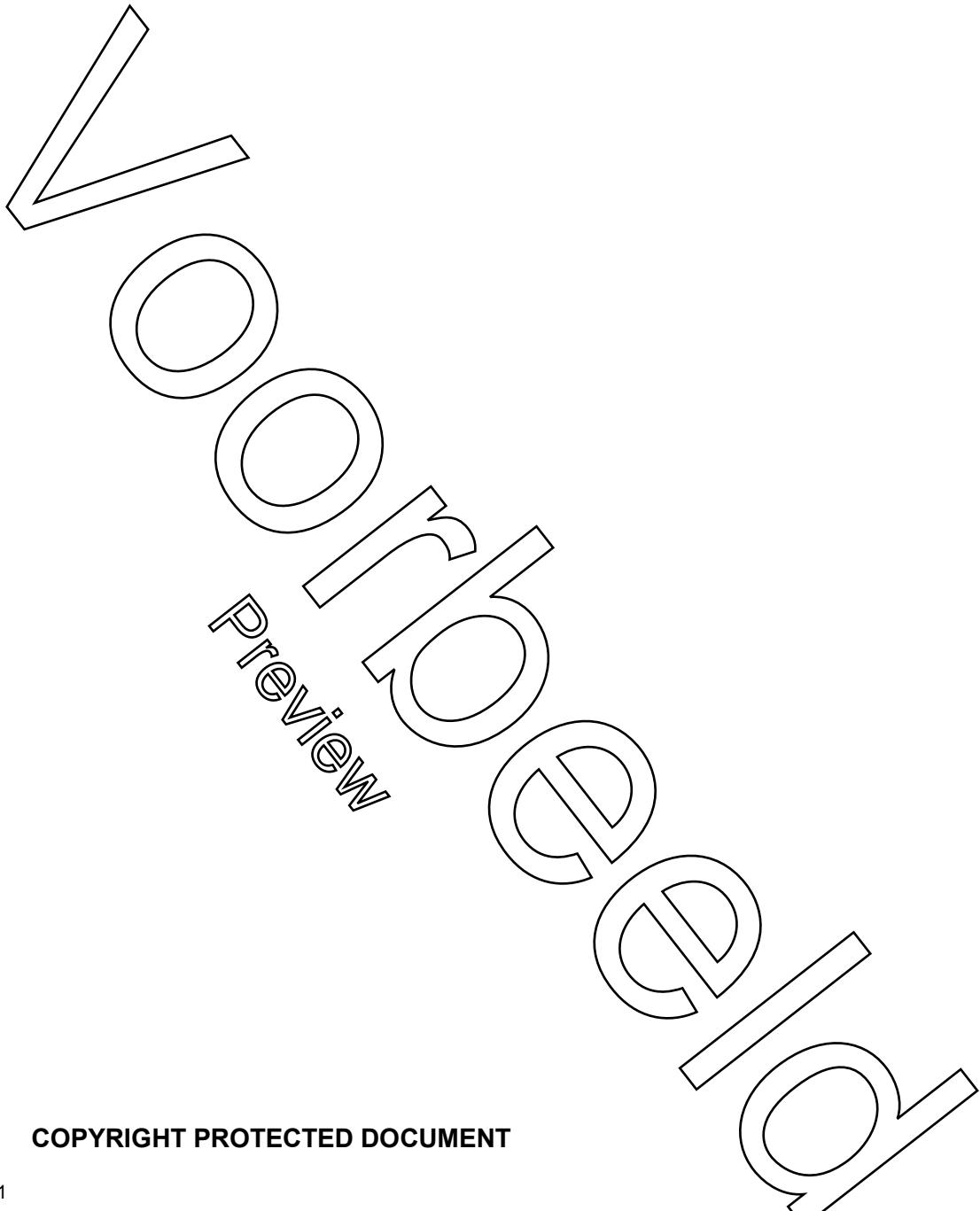
ISO
10218-1

Second edition
2011-07-01



Reference number
ISO 10218-1:2011(E)

© ISO 2011

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Hazard identification and risk assessment	6
5 Design requirements and protective measures	7
5.1 General	7
5.2 General requirements	7
5.3 Actuating controls	8
5.4 Safety-related control system performance (hardware/software)	8
5.5 Robot stopping functions	9
5.6 Speed control	11
5.7 Operational modes	11
5.8 Pendant controls	13
5.9 Control of simultaneous motion	15
5.10 Collaborative operation requirements	15
5.11 Singularity protection	16
5.12 Axis limiting	16
5.13 Movement without drive power	18
5.14 Provisions for lifting	18
5.15 Electrical connectors	18
6 Verification and validation of safety requirements and protective measures	19
6.1 General	19
6.2 Verification and validation methods	19
6.3 Required verification and validation	19
7 Information for use	20
7.1 General	20
7.2 Instruction handbook	20
7.3 Marking	21
Annex A (informative) List of significant hazards	23
Annex B (normative) Stopping time and distance metric	28
Annex C (informative) Functional characteristics of three-position enabling device	30
Annex D (informative) Optional features	31
Annex E (informative) Labelling	33
Annex F (normative) Means of verification of the safety requirements and measures	34
Bibliography	43

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10218-1 was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 2, *Robots and robotic devices*.

This second edition cancels and replaces the first edition (ISO 10218-1:2006), which has been technically revised. It also incorporates Technical Corrigendum ISO 10218-1:2006/Cor.1:2007.

ISO 10218 consists of the following parts, under the general title *Robots and robotic devices — Safety requirements for industrial robots*.

- Part 1: Robots
- Part 2: Robot systems and integration

Bestelformulier

Stuur naar:

NEN Standards Products & Services
t.a.v. afdeling Klantenservice
Antwoordnummer 10214
2600 WB Delft



NEN Standards Products & Services

Postbus 5059
2600 GB Delft

Vlinderweg 6
2623 AX Delft

T (015) 2 690 390
F (015) 2 690 271

www.nen.nl/normshop

Ja, ik bestel

— ex. NEN-EN-ISO 10218-1:2011 en Robots en robot apparatuur -
Veiligheidseisen - Deel 1: Industriële robots € 144.92

**Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via
www.nen.nl/normshop**

Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. www.nen.nl/nieuwsbrieven

Retourneren

Fax: 015 2 690 271
E-mail: klantenservice@nen.nl
Post: NEN Standards Products & Services,
t.a.v. afdeling Klantenservice
Antwoordnummer 10214,
2600 WB Delft
(geen postzegel nodig).

Gegevens

Bedrijf / Instelling

T.a.v.

O M O V

E-mail

Klantrummer NEN

Uw ordernummer

BTW nummer

Postbus / Adres

Postcode

Plaats

Telefoon

Fax

Factuuradres (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode

Plaats

Datum

Handtekening

Voorwaarden

- De prijzen zijn geldig tot 31 december 2018, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon 015 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typfouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: www.nen.nl/leveringsvoorwaarden.