PD ISO/TS 15066:2016



BSI Standards Publication

Robots and robotic devices — Collaborative robots



...making excellence a habit.™

National foreword

This Published Document is the UK implementation of ISO/TS 15066:2016.

The UK participation in its preparation was entrusted to Technical Committee AMT/-/2, Robots and robotic devices.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016. Published by BSI Standards Limited 2016

ISBN 978 0 580 85344 9

ICS 25.040.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 March 2016.

Amendments issued since publication

Date Text affected

TECHNICAL SPECIFICATION

ISO/TS 15066:2016 ISO/TS 15066

First edition 2016-02-15

Robots and robotic devices — Collaborative robots

Robots et dispositifs robotiques — Robots coopératifs



Reference number ISO/TS 15066:2016(E)

PD ISO/TS 15066:2016 **ISO/TS 15066:2016(E)**



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Ch. de Blandonnet 8 • CP 401 CH-1214 Vernier, Geneva, Switzerland Tel. +41 22 749 01 11 Fax +41 22 749 09 47 copyright@iso.org www.iso.org

Contents			Page	
Fore	word		iv	
Intr	oductio	n	v	
1		e		
	-			
2		native references		
3		s and definitions		
4	Collaborative industrial robot system design 4.1 General		2	
	4.2 4.3	Collaborative application design		
		4.3.1 General		
		4.3.2 Hazard identification		
		4.3.3 Task identification		
		4.3.4 Hazard elimination and risk reduction	5	
5	Requirements for collaborative robot system applications			
	5.1	General		
	5.2	Safety-related control system performance		
	5.3 5.4 5.5	Design of the collaborative workspace		
		Design of the collaborative robot operation		
		5.4.1 General		
		5.4.2 Protective measures		
		5.4.3 Stopping functions		
		5.4.4 Transitions between non-collaborative operation and collaborative operation 5.4.5 Enabling device requirements		
		Collaborative operations		
		5.5.1 General		
		5.5.2 Safety-rated monitored stop		
		5.5.3 Hand guiding		
		5.5.4 Speed and separation monitoring		
		5.5.5 Power and force limiting		
6	Verif	ication and validation	19	
7	Infor	mation for use		
	7.1	General		
	7.2	Information specific to collaborative robot operations		
	7.3	Description of the collaborative robot system	19	
	7.4	Description of the workplace application		
	7.5	Description of the work task		
	7.6	Information specific to power and force limiting applications		
Ann	ex A (in	formative) Limits for quasi-static and transient contact	21	
D:bl	ioananh	**	22	

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee ISO/TC 299, *Robots and robotic devices*.

This Technical Specification is relevant only in conjunction with the safety requirements for collaborative industrial robot operation described in ISO 10218-1 and ISO 10218-2.