

RIA TR R15.406-2014

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technical report

*for Industrial Robots and Robot Systems —
Safety Requirements*

Safeguarding

Registered with ANSI
July 20, 2014



Robotic Industries Association

RIA TR R15.406-2014

Technical Report
for Industrial Robots and Robot Systems — Safety Requirements —
Safeguarding

Secretariat
Robotic Industries Association

Registered July 20, 2014
American National Standards Institute, Inc.

Published by

Robotic Industries Association
900 Victors Way, Suite 140, Ann Arbor, MI 48108

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Printed in the United States of America

Foreword

The Robotic Industries Association (RIA) has prepared this Technical Report with the objective of enhancing the safety of personnel associated with industrial robot systems by presenting specific instructions and guidance for safeguarding of industrial robot systems. Safeguarding is an important requirement in the American National Standard ANSI/RIA R15.06-2012. The standard, a national adoption of the International Standard ISO 10218 (Parts 1 and 2), includes safeguarding requirements and refers to other documents pertaining to safeguarding. This Technical Report consolidates the guidance for safeguarding implementation.

Each industrial robot system application is unique and presents hazards that must be assessed and mitigated. Information in this Technical Report is fully consistent with the safeguarding requirements described in ANSI/RIA R15.06-2012. This Technical Report updates the safeguarding information previously presented in ANSI/RIA R15.06-1999.

This Technical Report is supplemental to the American National Standard ANSI/RIA R15.06-2012. Industry standards, including Technical Reports, are voluntary. The Robotic Industries Association makes no determination with respect to whether any robot, associated safeguarding, manufacturer, or user is in compliance with published standards.

Publication of this Technical Report that has been registered with the American National Standards Institute (ANSI) has been approved by the Accredited Standards Developer, Robotic Industries Association. This document is registered as a Technical Report according to the Procedures for the Registration of Technical Reports with ANSI. This document is not an American National Standard and the material contained herein is not normative in nature. Comments on the content of this document should be sent to:

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Technical Report for Industrial Robots and Robot Systems – Safety Requirements –

Safeguarding

0 Introduction

This Technical Report is supplemental to ANSI/RIA R15.06-2012. It provides safeguarding selection and implementation guidance for industrial robot system applications. The goal of safeguarding is to either control hazards or to prevent access to hazards, such that a person cannot reach over, under, around or through the safeguard to access the hazard.

For simplicity in reading, a reference to “Part 1” in this document is a reference to ANSI/RIA R15.06-2012 Part 1, and “Part 2” is a reference to ANSI/RIA R15.06-2012 Part 2.

This Technical Report includes several figures that illustrate key features and concepts associated with safeguarding robot cells. The figures are not drawn to scale and are not necessarily intended to demonstrate full compliance with all of the provisions of ANSI RIA R15.06-2012.

1 Scope

The scope of this Technical Report is to provide information on how to implement the safeguarding requirements of ANSI/RIA R15.06-2012. The document is not a standard and the information in the document is informative. The use of the word syntax “should” and “shall” indicate the relative importance of specific criteria or features in this Technical Report.

2 References

This Technical Report provides safeguarding guidance intended to be applied in conjunction with the requirements stated in the following standard:

ANSI/RIA R15.06-2012; *Industrial Robots and Robot Systems – Safety Requirements*

This Technical Report may be informative when compliance with other standards is also required.

3 Definitions and terms

For the purposes of this document, the terms and definitions given in ANSI/RIA R-15.06-2012 and the following apply.

3.1

actuator

separate part of an interlocking device which transmits the state of the guard (closed or not closed) to the actuating system

EXAMPLE – guard-mounted cam, key, shaped tongue, reflector, magnet, RFID tag.

NOTE 1 – See ISO 14119:2013, Annexes A to E.

NOTE 2 – Examples of actuators are shown in Figure 3.

[ISO 14119:2013, definition 3.12 and Figure 2]