

AS IEC 61131.8—2004
IEC 61131-8:2000

AS IEC 61131.8

Australian Standard™

Programmable controllers

Part 8: Guidelines for the application and implementation of programming languages

This Australian Standard was prepared by Committee IT-006, Information Technology for Industrial Automation. It was approved on behalf of the Council of Standards Australia on 15 January 2004 and published on 22 March 2004.

The following are represented on Committee IT-006:

Association of Consulting Engineers Australia
Australian Electrical and Electronic Manufacturers Association
CSIRO Centre for Planning and Design
CSIRO Manufacturing and Infrastructure Technology
Department of Defence (Australia)
Institute of Instrumentation, Control and Automation, Australia
Institution of Engineers Australia
Monash University
RMIT University
The University of Melbourne

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

AS IEC 61131.8—2004

Australian Standard™

Programmable controllers

Part 8: Guidelines for the application and implementation of programming languages

First published as AS IEC 61131.8—2004.

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5776 6

PREFACE

This Standard was prepared by the Standards Australia Committee IT-006, Information Technology for Industrial Automation.

The objective of this Standard is to provide guidelines for the implementation of programming languages defined in AS IEC 61131.3 in programmable controller systems and their programming support environments (PSEs).

This Standard is identical with, and has been reproduced from, IEC 61131-8:2000, *Programmable controllers—Part 8: Guidelines for the application and implementation of programming languages*.

This Standard is Part 8 of AS IEC 61131 *Programmable controllers*, which consists of the following:

Part 1: General information

Part 2: Equipment requirements and tests

Part 3: Programming languages

Part 4: User guidelines

Part 5: Communications

Part 7: Fuzzy control programming

Part 8: Guidelines for the application and implementation of programming languages (this Standard)

AS IEC 61131 does not have a Part 6. A project to develop IEC 61131-6 *Programmable controller communications via field bus* was deleted in September 2000 by the IEC.

In this Standard, the following print types are used:

- requirements proper: in arial type;
- *test specifications: in italic type;*
- explanatory matter: in smaller arial type.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this part of IEC 61131’ should read ‘this part of AS IEC 61131’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

CONTENTS

| | <i>Page</i> |
|--|-------------|
| 1 General..... | 1 |
| 1.1 Scope | 1 |
| 1.2 Reference documents | 1 |
| 1.3 Overview..... | 3 |
| 2 Introduction to IEC 61131-3 | 3 |
| 2.1 General considerations | 3 |
| 2.2 Historical limitations | 5 |
| 2.3 New features in IEC 61131-3 | 6 |
| 2.4 Software engineering considerations..... | 7 |
| 2.4.1 Software quality measures | 7 |
| 2.4.2 Application of software engineering principles | 8 |
| 2.4.3 Portability..... | 10 |
| 3 Application guidelines | 11 |
| 3.1 Use of data types..... | 11 |
| 3.1.1 Type vs. variable initialization | 11 |
| 3.1.2 Use of enumerated and subrange types | 11 |
| 3.1.3 Use of BCD data | 12 |
| 3.1.4 Use of REAL data types | 14 |
| 3.1.5 Use of character string data types..... | 14 |
| 3.1.6 Use of time data types | 14 |
| 3.1.7 Use of multi-element variables | 15 |
| 3.2 Data import and export | 15 |
| 3.2.1 Global and external variables..... | 16 |
| 3.2.2 Input/output (VAR_IN_OUT) variables | 16 |
| 3.3 Use of function blocks..... | 18 |
| 3.3.1 Function block types and instances..... | 18 |
| 3.3.2 Scope of data within function blocks..... | 19 |
| 3.3.3 Function block access and invocation | 20 |
| 3.4 Differences between function block instances and functions | 21 |
| 3.5 Use of indirectly referenced function block instances | 21 |
| 3.5.1 Establishing an indirect function block instance reference | 21 |
| 3.5.2 Access to indirectly referenced function block instances | 23 |
| 3.5.3 Invocation of indirectly referenced function block instances..... | 23 |
| 3.5.4 Recursion of indirectly referenced function block instances..... | 26 |
| 3.5.5 Execution control of indirectly referenced function block instances..... | 26 |
| 3.5.6 Use of indirectly referenced function block instances in functions..... | 26 |
| 3.6 Recursion within programmable controller programming languages | 26 |
| 3.7 Single and multiple invocation..... | 27 |
| 3.8 Language specific features | 28 |
| 3.8.1 Edge triggered functionality..... | 28 |
| 3.8.2 Use of EN/ENO in functions and function blocks | 29 |
| 3.8.3 Use of non-IEC 61131-3 languages..... | 30 |

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-