AS IEC 61131.3:2014
IEC 61131-3, Ed. 3.0 (2013)

AS IEC 61131.3:2014

Programmable controllers

Part 3: Programming languages

This Australian Standard® was prepared by Committee IT-006, Industrial Process Measurement, Control and Automation. It was approved on behalf of the Council of Standards Australia on 14 November 2014.
This Standard was published on 19 December 2014.

The following are represented on Committee IT-006:

- Australian Computer Society
- Australian Industry Group
- Australian Petroleum Production and Exploration Association
- Australian Safety Critical Systems Association
- Consult Australia
- Engineers Australia
- Institute of Chemical Engineers Australia
- Institute of Instrumentation, Control and Automation Australia
- ISACA
- Process Control Society
- University of Queensland
- Workplace Health and Safety Queensland

This Standard was issued in draft form for comment as DR AS IEC 61131.3:2014.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that 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Standards may also be withdrawn.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 that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard®

Programmable controllers

Part 3: Programming languages

Originated as AS 4168.3—1994.
Previous edition AS IEC 61131.3—2004.
Second edition 2014.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 74342 931 0

PREFACE

This Standard was prepared by the Standards Australia Committee IT-006, Industrial Process Measurement, Control and Automation, to supersede AS IEC 61131.3—2004.

The objective of this Standard is to specify syntax and semantics of programming languages for programmable controllers as defined in AS IEC 61131.1.

This Standard should be read in conjunction with the other parts of the AS IEC 61131 series.

This Standard is identical with, and has been reproduced from, IEC 61131-3, Ed. 3.0 (2013), *Programmable controllers*—Part 3: *Programming languages*.

This edition is a fully compatible extension of the previous (2004) edition. The main extensions are new data types and conversion functions, references, name spaces and the object oriented features of classes and function blocks. For further details, see Annex B.

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

(a) In the source text ‘this part of IEC 61131’ should read ‘this Australian Standard’.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard	*Australian Standard*
IEC	AS IEC
61131 Programmable controllers	61131 Programmable controllers
61131-1 Part 1: General information	61131.1 Part 1: General information
61131-5 Part 5: Communications	61131.5 Part 5: Communications

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

CONTENTS

AUSTRALIAN STANDARD

Programmable controllers

Part 3:
Programming languages

1 Scope

This part of IEC 61131 specifies syntax and semantics of programming languages for programmable controllers as defined in Part 1 of IEC 61131.

The functions of program entry, testing, monitoring, operating system, etc., are specified in Part 1 of IEC 61131.

This part of IEC 61131 specifies the syntax and semantics of a unified suite of programming languages for programmable controllers (PCs). This suite consists of two textual languages, Instruction List (IL) and Structured Text (ST), and two graphical languages, Ladder Diagram (LD) and Function Block Diagram (FBD).

An additional set of graphical and equivalent textual elements named Sequential Function Chart (SFC) is defined for structuring the internal organization of programmable controller programs and function blocks. Also, configuration elements are defined which support the installation of programmable controller programs into programmable controller systems.

In addition, features are defined which facilitate communication among programmable controllers and other components of automated systems.

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.

IEC 61131-1, *Programmable controllers – Part 1: General information*

IEC 61131-5, *Programmable controllers – Part 5: Communications*

ISO/IEC 10646:2012, *Information technology – Universal Coded Character Set (UCS)*

ISO/IEC/IEEE 60559, *Information technology – Microprocessor Systems – Floating-Point arithmetic*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61131-1 and the following apply.

3.1
absolute time
combination of time of day and date information