

INTERNATIONAL STANDARD

IEC
61499-2

First edition
2005-01

Function blocks –

Part 2:
Software tools requirements

Withdrawn

© IEC 2005 — Copyright - all rights reserved

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 the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

X

For price, see current catalogue

CONTENTS

FOREWORD.....	3
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Software tool requirements	7
4.1 Information to be provided by the software tool supplier	7
4.2 Exchange of library elements	7
4.3 Information to be provided by the supplier of library elements	7
4.4 Display of declarations.....	8
4.5 Modification of declarations	8
4.6 Validation of declarations.....	8
4.7 Implementation of declarations	8
4.8 System operation, testing and maintenance	8
Annex A (normative) Document Type Definitions (DTDs)	9
Annex B (informative) Graphics model	25
Annex C (informative) Examples	28
Figure B.1 – Graphics model.....	25
Figure B.2 – ECC drawing example.....	27
Table A.1 – Document Type Definition (DTD) elements.....	9
Table A.2 – Data Type DTD	10
Table A.3 – Data Type DTD Elements	11
Table A.4 – Library Element DTD	14
Table A.5 – LibraryElement DTD Elements	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FUNCTION BLOCKS –

Part 2: Software tool requirements

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61499-2 has been prepared by IEC technical committee 65: Industrial-process measurement and control.

This standard cancels and replaces IEC/PAS 61499-2 published in 2001. This first edition constitutes a technical revision.

The following major technical changes have occurred between the PAS edition and this edition:

- a) Syntax for network segments, links and parameters has been added in Annex A for consistency with IEC 61499-1.
- b) Syntax for parameters instead of constant data connections has been included for consistency with IEC 61499-1.

The text of this standard is based on the following documents:

CDV	Report on voting
65/339/CDV	65/347/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 61499 consists of the following parts, under the general title *Function blocks*:

Part 1: Architecture

Part 2: Software tool requirements

Part 3: Tutorial information

Part 4: Rules for compliance profiles ¹

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

¹ Under consideration.

INTRODUCTION

The IEC 61499 series consists of four Parts:

- Part 1 contains:
 - general requirements, including an introduction, scope, normative references, definitions, and reference models;
 - rules for the declaration of *function block types*, and rules for the behaviour of *instances* of the types so declared;
 - rules for the use of function blocks in the *configuration* of distributed Industrial-Process Measurement and Control *Systems* (IPMCSs);
 - rules for the use of function blocks in meeting the communication requirements of distributed IPMCSs;
 - rules for the use of function blocks in the management of *applications, resources* and *devices* in distributed IPMCSs.
- Part 2 (this part of IEC 61499) defines requirements for *software tools* to support the following systems engineering tasks enumerated in Clause 1 of IEC 61499-1:
 - the specification of *function block types*;
 - the functional specification of *resource types* and *device types*;
 - the specification, analysis, and validation of distributed IPMCSs;
 - the *configuration, implementation, operation, and maintenance* of distributed IPMCSs;
 - the exchange of *information* among *software tools*.

It is assumed that such software tools may be used in the context of an Engineering Support System (ESS) as described in Clause C.1 of IEC 61499-1.
- Part 3 has the purpose of increasing the understanding, acceptance, and both generic and domain-specific applicability of IPMCS architectures and software tools meeting the requirements of the other Parts, by providing:
 - answers to Frequently Asked Questions (FAQs) regarding the IEC 61499 series;
 - examples of the use of IEC 61499 constructs to solve frequently encountered problems in control and automation engineering.
- Part 4 defines rules for the development of *compliance profiles* which specify the features of IEC 61499-1 and 61499-2 to be implemented in order to promote the following attributes of IEC 61499-based systems, devices and software tools:
 - interoperability of devices from multiple suppliers;
 - portability of software between software tools of multiple suppliers; and
 - configurability of devices from multiple vendors by software tools of multiple suppliers.

FUNCTION BLOCKS –

Part 2: Software tool requirements

1 Scope

This part of IEC 61499 defines requirements for *software tools* to support the following systems engineering tasks enumerated in Clause 1 of IEC 61499-1:

- the specification of *function block types*;
- the functional specification of *resource types* and *device types*;
- the specification, analysis, and validation of distributed IPMCSs;
- the *configuration, implementation*, operation, and maintenance of distributed IPMCSs;
- the exchange of *information* among *software tools*.

It is assumed that such software tools may be used in the context of an Engineering Support System (ESS) as described in Clause C.1 of IEC 61499-1.

It is beyond the scope of this part of IEC 61499 to specify the entire life cycle of industrial-process measurement and control systems (IPMCSs), of the entire set of tasks and activities required to support an IPCMS over its life cycle. However, other standards which do specify such tasks and activities may extend or modify the requirements specified in this Part.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61499-1, *Function blocks - Part 1: Architecture*

IEC 61499-4, *Function Blocks - Part 4: Rules for compliance profiles*²

The normative references given in IEC 61499-1 apply to this part of IEC 61499.

² To be published.