## EESTI STANDARD

## EVS-EN 61499-2:2005

# Function blocks Part 2: Software tools requirements

Function blocks Part 2: Software tools requirements

**EVS** EESTI STANDARDIKESKUS

## EESTI STANDARDI EESSÕNA            NATIONAL FOREWORD

| | |
|---|---|
| Käesolev Eesti standard EVS-EN 61499-2:2005 sisaldab Euroopa standardi EN 61499-2:2005 ingliskeelset teksti. | This Estonian standard EVS-EN 61499-2:2005 consists of the English text of the European standard EN 61499-2:2005. |
| Käesolev dokument on jõustatud 27.09.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. | This document is endorsed on 27.09.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. |
| Standard on kättesaadav Eesti standardiorganisatsioonist. | The standard is available from Estonian standardisation organisation. |

| | |
|---|---|
| **Käsitlusala:** | **Scope:** |
| defines requirements for software tools to support the following systems engineering tasks enumerated in Clause 1 of IEC 61499-1: -the functional specification of resource types and device types; -the configuration, implementation, operation, and maintenance of distributed IPMCSs; -the specification of function block types; -the specification, analysis, and validation of distributed IPMCSs; -the exchange of information among software tools. | defines requirements for software tools to support the following systems engineering tasks enumerated in Clause 1 of IEC 61499-1: -the functional specification of resource types and device types; -the configuration, implementation, operation, and maintenance of distributed IPMCSs; -the specification of function block types; -the specification, analysis, and validation of distributed IPMCSs; -the exchange of information among software tools. |

**ICS** 25.040.40, 35.240.50

**Võtmesõnad:**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 61499-2

August 2005

ICS 25.040.40; 35.240.50

English version

## Function blocks
## Part 2: Software tools requirements
(IEC 61499-2:2005)

Blocs fonctionnels
Partie 2: Spécifications des outils logiciels
(CEI 61499-2:2005)

Funktionsbausteine für industrielle
Leitsysteme
Teil 2: Anforderungen an Software-
Werkzeuge
(IEC 61499-2:2005)

This European Standard was approved by CENELEC on 2005-06-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

# CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

Ref. No. EN 61499-2:2005 E

# Foreword

The text of the International Standard IEC 61499-2:2005, prepared by IEC TC 65, Industrial-process measurement and control, was submitted to the formal vote and was approved by CENELEC as EN 61499-2 on 2005-06-01 without any modification.

The following dates were fixed:

– latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2006-06-01

– latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2008-06-01

Annex ZA has been added by CENELEC.

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# Endorsement notice

The text of the International Standard IEC 61499-2:2005 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA
(normative)

## Normative references to international publications
## with their corresponding European publications

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.

NOTE    Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 61499-1 | - [1] | Function blocks<br>Part 1: Architecture | EN 61499-1 | 2005 [2] |
| IEC 61499-4 | - [3] | Part 4: Rules for compliance profiles | EN 61499-4 | - [3] |

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

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[1] Undated reference.

[2] Valid edition at date of issue.

[3] To be published.

# INTERNATIONAL STANDARD

# IEC 61499-2

First edition
2005-01

**Function blocks –**

**Part 2:**
**Software tools requirements**

Reference number
IEC 61499-2:2005(E)

## Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

## Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

## Further information on IEC publications

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- **IEC Web Site (www.iec.ch)**

- **Catalogue of IEC publications**

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  This summary of recently issued publications (www.iec.ch/online_news/ justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

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# INTERNATIONAL STANDARD

# IEC 61499-2

First edition
2005-01

**Function blocks –**

**Part 2:
Software tools requirements**

PRICE CODE   **X**

*For price, see current catalogue*

# CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## 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.

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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.

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[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), or 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.

## 3   Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61499-1 as well as the following apply.

**3.1**
**library element**
collection of declarations applying to a data type, function block type, adapter type, subapplication type, resource type, device type, or system configuration.

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[2] To be published.