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Funktionsblock – Del 1: Arkitektur

*Function blocks –
Part 1: Architecture*

Som svensk standard gäller europastandarden EN 61499-1:2005. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61499-1:2005.

Nationellt förord

Europastandarden EN 61499-1:2005^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61499-1, First edition, 2005 - Function blocks - Part 1: Architecture**

utarbetad inom International Electrotechnical Commission, IEC.

^{*)} EN 61499-1:2005 ikraftsattes 2005-10-24 som SS-EN 61499-1 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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Function blocks
Part 1: Architecture
(IEC 61499-1:2005)

Blocs fonctionnels
Partie 1: Architecture
(CEI 61499-1:2005)

Funktionsbausteine für industrielle
Leitsysteme
Teil 1: Architektur
(IEC 61499-1:2005)

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.

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CENELEC

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

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SEK Svensk Elstandard

Foreword

The text of the International Standard IEC 61499-1:2005, prepared by IEC TC 65, Industrial-process measurement and control, was submitted to the formal vote and was approved by CENELEC as EN 61499-1 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with the EN have to be withdrawn (dow) 2008-06-01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.

Endorsement notice

The text of the International Standard IEC 61499-1:2005 was approved by CENELEC as a European Standard without any modification.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-351	1998	International Electrotechnical Vocabulary Part 351: Automatic control	-	-
IEC 61131-3	2003	Programmable controllers Part 3: Programming languages	EN 61131-3	2003
ISO/IEC 7498-1	1994	Information technology - Open systems interconnection - Basic reference model Part 1: The basic model	EN ISO/IEC 7498-1	1995
ISO/IEC 8824-1	2000	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
ISO/IEC 8825-1	2000	Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)	-	-
ISO/IEC 10646	2003	Information technology - Universal multiple-octet coded character set (UCS)	-	-
ISO/IEC 10731	1994	Information technology - Open Systems Interconnection Basic reference model - Conventions for the definition of OSI services	-	-
ISO/AFNOR ISBN 2-12-4869111-6	1989	Dictionary of computer science - The standardised vocabulary	-	-

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INTRODUCTION

The IEC 61499 series consists of four Parts:

- d) Part 1 (this part of IEC 61499) contains:
- general requirements, including scope, normative references, definitions, and reference models;
 - rules for the declaration of *function block types*, and rules for the behavior 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.
- e) Part 2 defines requirements for *software tools* to support the following systems engineering tasks enumerated in Clause 1 of this part of IEC 61499:
- 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*.
- f) 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.
- g) Part 4 defines rules for the development of *compliance profiles* which specify the features of IEC 61499-1 and IEC 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 1: Architecture

1 Scope

This part of IEC 61499 defines a generic architecture and presents guidelines for the use of *function blocks* in distributed Industrial-Process Measurement and Control Systems (IPMCSs). This architecture is presented in terms of implementable reference *models*, textual syntax and graphical representations. These models, representations and syntax can be used for:

- the specification and standardization of *function block types*;
- the functional specification and standardization of system elements;
- the implementation independent specification, analysis, and validation of distributed IPMCSs;
- the *configuration, implementation, operation, and maintenance* of distributed IPMCSs;
- the exchange of *information* among *software tools* for the performance of the above *functions*.

NOTE 1 This part of IEC 61499 does not restrict or specify the functional capabilities of IPMCSs or their system elements, except as such capabilities are represented using the elements defined herein. IEC 61499-4 addresses the extent to which the elements defined in this part of IEC 61499 may be restricted by the functional capabilities of compliant systems, subsystems, and devices.

Part of the purpose of this part of IEC 61499 is to provide reference models for the use of function blocks in other standards dealing with the support of the system life cycle, including system planning, design, implementation, validation, operation and maintenance. The models given in this part of IEC 61499 are intended to be generic, domain independent and extensible to the definition and use of function blocks in other standards or for particular applications or application domains. It is intended that specifications written according to the rules given in this part of IEC 61499 be concise, implementable, complete, unambiguous, and consistent.

NOTE 2 The provisions of this part of IEC 61499 alone are not sufficient to ensure interoperability among devices of different vendors. Standards complying with this part of IEC 61499 may specify additional provisions to ensure such interoperability.

NOTE 3 Standards complying with this part of IEC 61499 may specify additional provisions to enable the performance of *system, device, resource* and *application* management *functions*.

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 60050-351:1998, *International Electrotechnical Vocabulary (IEV) – Part 351: Automatic Control*

IEC 61131-3:2003, *Programmable controllers – Part 3: Programming languages*

ISO/IEC 7498-1:1994, *Information Technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 8824-1, *Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO/IEC 8825-1, *Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*

ISO/IEC 10646, *Information technology - Universal Multiple-Octet Coded Character Set (UCS)*

ISO/IEC 10731, *Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services*

ISO/AFNOR, *Dictionary of Computer Science*, 1989, ISBN 2-12-4869111-6