

This document is a preview generated by EVS

OPC Unified Architecture -- Part 10: Programs

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 62541-10:2015 sisaldab Euroopa standardi EN 62541-10:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 62541-10:2015 consists of the English text of the European standard EN 62541-10:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.04.2015.	Date of Availability of the European standard is 24.04.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 25.040.40, 25.100.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 62541-10**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2015

ICS 25.040.40; 35.100

Supersedes EN 62541-10:2012

English Version

## OPC unified architecture - Part 10: Programs (IEC 62541-10:2015)

Architecture unifiée OPC - Partie 10: Programmes  
(IEC 62541-10:2015)

OPC Unified Architecture - Teil 10: Programme  
(IEC 62541-10:2015)

This European Standard was approved by CENELEC on 2015-04-14. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 65E/383/FDIS, future edition 2 of IEC 62541-10, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62541-10:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-01-14
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-04-14

This document supersedes EN 62541-10:2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

## Endorsement notice

The text of the International Standard IEC 62541-10:2015 was approved by CENELEC as a European Standard without any modification.

Preview generated by EVS

**Annex ZA**  
(normative)

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

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62541-3	2015	OPC Unified Architecture -- Part 3: Address Space Model	EN 62541-3	2015 <sup>1)</sup>
IEC 62541-4	2015	OPC Unified Architecture -- Part 4: Services	EN 62541-4	2015 <sup>1)</sup>
IEC 62541-5	2015	OPC Unified Architecture -- Part 5: Information Model	EN 62541-5	2015 <sup>1)</sup>
IEC 62541-7	-	OPC Unified Architecture -- Part 7: Profiles	EN 62541-7	-
IEC/TR 62541-1	-	OPC unified architecture -- Part 1: Overview and concepts	CLC/TR 62541-1	-

---

1) To be published.

## CONTENTS

FOREWORD .....	4
1 Scope .....	6
2 Normative references .....	6
3 Terms, definitions and conventions .....	6
3.1 Terms and definitions .....	6
3.2 Abbreviations .....	7
4 Concepts .....	7
4.1 General .....	7
4.2 Programs .....	8
4.2.1 Overview .....	8
4.2.2 Security considerations .....	9
4.2.3 Program Finite State Machine .....	9
4.2.4 Program states .....	10
4.2.5 State transitions .....	11
4.2.6 Program state transition stimuli .....	11
4.2.7 Program Control Methods .....	11
4.2.8 Program state transition effects .....	12
4.2.9 Program result data .....	12
4.2.10 Program lifetime .....	13
5 Model .....	13
5.1 General .....	13
5.2 ProgramType .....	14
5.2.1 Overview .....	14
5.2.2 ProgramType Properties .....	16
5.2.3 ProgramType components .....	16
5.2.4 ProgramType causes (Methods) .....	21
5.2.5 ProgramType effects (Events) .....	23
5.2.6 AuditProgramTransitionEventType .....	25
5.2.7 FinalResultData .....	26
5.2.8 ProgramDiagnostic DataType .....	26
5.2.9 ProgramDiagnosticType VariableType .....	27
Annex A (informative) Program example .....	28
A.1 Overview .....	28
A.2 DomainDownload Program .....	28
A.2.1 General .....	28
A.2.2 DomainDownload states .....	29
A.2.3 DomainDownload transitions .....	30
A.2.4 DomainDownload Methods .....	30
A.2.5 DomainDownload Events .....	31
A.2.6 DomainDownload model .....	31
Figure 1 – Automation facility control .....	8
Figure 2 – Program illustration .....	9
Figure 3 – Program states and transitions .....	10
Figure 4 – Program Type .....	14

Figure 5 – Program FSM References .....	17
Figure 6 – ProgramType causes and effects .....	21
Figure A.1 – Program example .....	28
Figure A.2 – DomainDownload state diagram .....	29
Figure A.3 – DomainDownloadType partial state model .....	35
Figure A.4 – Ready To Running model .....	38
Figure A.5 – Opening To Sending To Closing model .....	40
Figure A.6 – Running To Suspended model .....	41
Figure A.7 – Suspended To Running model .....	42
Figure A.8 – Running To Halted – Aborted model .....	43
Figure A.9 – Suspended To Aborted model .....	44
Figure A.10 – Running To Completed model .....	45
Figure A.11 – Sequence of operations .....	46
Table 1 – Program Finite State Machine .....	9
Table 2 – Program states .....	10
Table 3 – Program state transitions .....	11
Table 4 – Program Control Methods .....	12
Table 5 – ProgramType .....	15
Table 6 – Program states .....	17
Table 7 – Program transitions .....	19
Table 8 – ProgramType causes .....	22
Table 9 – ProgramTransitionEventType .....	23
Table 10 – ProgramTransitionEvents .....	24
Table 11 – AuditProgramTransitionEventType .....	25
Table 12 – ProgramDiagnosticDataType structure .....	26
Table 13 – ProgramDiagnosticDataType definition .....	26
Table 14 – ProgramDiagnosticType VariableType .....	27
Table A.1 – DomainDownload states .....	30
Table A.2 – DomainDownload Type .....	32
Table A.3 – Transfer State Machine Type .....	32
Table A.4 – Transfer State Machine – states .....	33
Table A.5 – Finish State Machine Type .....	33
Table A.6 – Finish State Machine – states .....	34
Table A.7 – DomainDownload Type Property Attributes variable values .....	34
Table A.8 – Additional DomainDownload transition types .....	36
Table A.9 – Start Method additions .....	38
Table A.10 – StartArguments .....	39
Table A.11 – IntermediateResults Object .....	40
Table A.12 – Intermediate result data Variables .....	41
Table A.13 – FinalResultData .....	44
Table A.14 – Final result Variables .....	45