

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 10303-210

September 2002

ICS 25.040.40

English version

**Industrial automation systems and integration - Product data
representation and exchange - Part 210: Application protocol:
Electronic assembly, interconnection, and packaging design
(ISO 10303-210:2001)**

Systèmes d'automatisation industrielle et intégration -
Représentation et échange de données de produits - Partie
210: Protocole d'application: Interconnexions électroniques,
assemblage, et conception d'emballage (ISO 10303-
210:2001)

Industrielle Automatisierungssysteme und Integration -
Produktdateidarstellung und -austausch - Teil 210:
Anwendungsprotokoll: Elektronische Montage, Verbindung
und Gestaltung (ISO 10303-210:2001)

This European Standard was approved by CEN on 12 July 2002.

CEN 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 Management Centre or to any CEN 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 CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

INTERNATIONAL STANDARD

ISO
10303-210

First edition
2001-05-15

Industrial automation systems and integration — Product data representation and exchange —

Part 210: Application protocol: Electronic assembly, interconnection, and packaging design

*Systèmes d'automatisation industrielle et intégration — Représentation et
échange de données de produits —*

*Partie 210: Protocole d'application: Interconnexions électroniques,
assemblage, et conception d'emballage*

Reference number
ISO 10303-210:2001(E)



© ISO 2001

ISO 10303-210:2001(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2001

All rights reserved. Unless otherwise specified, 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 either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents		Page
1	Scope	1
2	Normative references	3
3	Terms, definitions, and abbreviations	6
3.1	Terms defined in IEC 60050-541	6
3.2	Terms defined in ISO 129	6
3.3	Terms defined in ISO 1101	6
3.4	Terms defined in ISO 2692	7
3.5	Terms defined in ISO 2692: Amendment 1	7
3.6	Terms defined in ISO 5459	7
3.7	Terms defined in ISO 8015	7
3.8	Terms defined in ISO 10303-1	7
3.9	Terms defined in ISO 10303-11	8
3.10	Terms defined in ISO 10303-44	8
3.11	Terms defined in ISO 10303-45	9
3.12	Terms defined in ISO 10303-46	9
3.13	Other definitions	9
3.14	Abbreviations	11
4	Information requirements	13
4.1	Units of functionality	13
4.2	Application objects	85
4.3	Application assertions	689
5	Application interpreted model	857
5.1	Mapping table	857
5.2	AIM EXPRESS short listing	2082
6	Conformance requirements	2973
6.1	Device Functional and Physical Characterization	2976
6.2	Interconnect Technology Constraints	2985
6.3	Assembly Technology Constraints	2994
6.4	Assembly Functional Requirements	3002
6.5	Assembly Physical Requirements	3011
6.6	Interconnect Functional Requirements	3019
6.7	Interconnect Physical Requirements	3027
6.8	Assembly Physical Design	3036
6.9	Interconnect Design	3046
6.10	Interconnect Design (Microwave)	3058
6.11	Geometric Dimensioning and Tolerancing	3070
6.12	Product Rule	3079
6.13	Functional Decomposition	3082
6.14	Package Functional and Physical Characterization	3089
6.15	Geometrically Bounded Surface Model	3097

ISO 10303-210:2001(E)

6.16	Wireframe Model With Topology	3098
6.17	Advanced Boundary Representation	3099
6.18	Constructive Solid Geometry	3100
6.19	Extruded Solid	3101
6.20	Geometrically Bounded 2d Wireframe Model	3101
6.21	Wireframe 2d Model With Topology	3102
6.22	Curve 2d	3102
6.23	Basic Curve 2d	3102
6.24	Laminate Assembly Design	3103
6.25	Connection Zone Based Model Extraction	3108
6.26	Functional Specification	3111
6.27	Physical Unit Physical Characterization	3115
6.28	Packaged Part White Box Model	3123
6.29	Printed Part Functional and Physical Characterization	3132
6.30	Open Shell Model	3140
6.31	Assembly Functional Interface Requirements	3140
6.32	Assembly Physical Interface Requirements	3145
6.33	Assembly Requirement Allocation	3152
6.34	Interconnect Requirement Allocation	3159
6.35	Functional Requirement Allocation	3166
6.36	Product Requirement Allocation	3168
6.37	Datum Difference Based Model Definition	3171
6.38	Datum Difference Based Characteristic	3174
6.39	Design Management	3177
Annex A (normative)	AIM EXPRESS expanded listing	3183
Annex B (normative)	Short names of entities	3674
Annex C (normative)	Implementation method specific requirements	3691
Annex D (normative)	Protocol Implementation Conformance Statement (PICS) proforma	3692
Annex E (normative)	Information object registration	3695
E.1	Document identification	3695
E.2	Schema identification	3695
Annex F (normative)	Application interpreted constructs	3696
F.1	Geometrically bounded surface	3696
F.2	Manifold surface	3714
Annex G (informative)	Application activity model	3731
G.1	Application activity model definitions	3731
G.2	Application activity model figures	3751
Annex H (informative)	Application reference model	3773
H.1	EXPRESS	3773
H.2	EXPRESS-G	3922

ISO 10303-210:2001(E)

Annex J (informative)	AIM EXPRESS-G	4166
Annex K (informative)	AIM EXPRESS listing	4247
Annex L (informative)	Technical discussions	4248
Bibliography		4321
Index		4324

Figures

1	Data planning model	xxi
2	Altered_package	89
3	Analytical_model of a resistor	93
4	Array_placement_group	104
5	Assembled_with_bonding	105
6	Assembled_with_fasteners	106
7	Assembly_component	110
8	Assembly_joint	114
9	Assembly_module_usage_view	122
10	Bevel_edge_feature_shape	131
11	Blind_via	133
12	Fabrication drawing detail	139
13	Alternative functions for Bounding_Curve	140
14	Buried_via	141
15	Component_termination_passage role in an assembly	180
16	Component_termination_passage cross-section view	180
17	Component_termination_passage_template terminals	186
18	Partially exploded view of a Conductor	199
19	Conductor	204
20	Contact_size_dependent_land	217
21	Square corners with extend	222
22	Corners with positive extend	223
23	Square corners with truncate	223
24	Round corners	224
25	Curve end treatment	224
26	Completed curve	225
27	Cutout plan view showing installed component	229
28	Cutout cross-section view showing installed component	229
29	Cutout_edge_segment	230
30	Datum	234
31	Datum_based_length_measure	237
32	Datum_system	249
33	Measurement arrangement for minimum_annular_ring	259
34	Dependently_located_layer_connection_point	264
35	Power Plane 1 design intent	270
36	Power Plane 2 design intent	270

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-