ELECTROMECHANICAL STEP ON A PAGE

ISO 10303 STandard for the Exchange of Product model data (STEP)

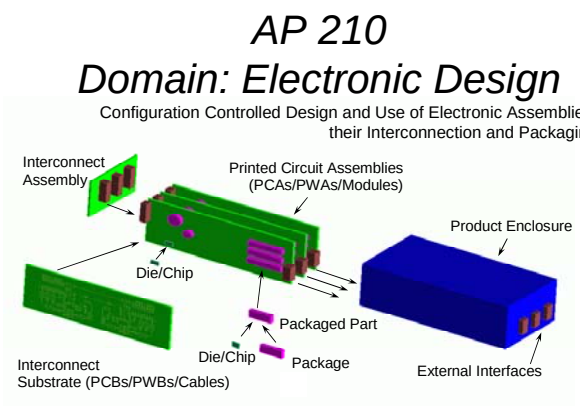
Organizations and industries all over the world exchange product model data. These exchanges can be between requirements/concept, analysis, detailed design/BoM, manufacturing, or lifecycle support processes. Industry and government collaborators developed a suite of standards in the International for Organization Standardization (ISO) to exchange neutral product model data. It is the **ST**andard for the **E**xchange of **P**roduct model data (STEP).

STEP for Electromechanical Product Model Data Exchange

The STEP development community is working to ensure these standards support international product model exchange requirements. The electronics community is participating to ensure that their product model data can be exchanged to support real business processes. Application Protocols (APs) have been developed to address specific products and processes. These are the key APs that are applicable to the electronics industry.

Electromechanical Standards

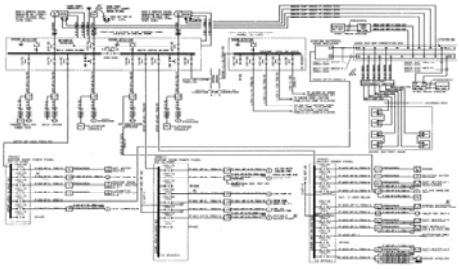
AP 210 - Electronic assembly, interconnect and packaging design (Published)



AP 210 specifies the data for electromechanical design process. It includes specific data needed to support multi-level hierarchical design of electrical modules including both electrical and mechanical (structural/thermal) and interface aspects of the design. Multiple levels of fidelity and application are supported by the functional and physical models. A completely neutral electrical/mechanical component library is supported. Detailed netlist and layout structures and features are supported for 2D and 3D interconnect, including functional, OEM and Fabricator views of the stackup. AP 210 allows a user to classify requirements according to life cycle and domain context, manage requirements, declarations, inputs/outputs, and simulation libraries for analysis processes, supports design and Bill of materials, and provides manufacturing/inspection data for modules, assemblies, interconnect substrates including but not limited to printed wiring and printed circuit boards. AP 210 suffices to replace multiple point solution standards with one integrated model. AP 210 support for mechanical design provides the ability for an intelligent mechanical model that contains information related to the minimum requirements for supporting electrical design processes such as connector pinout and orientation. AP 210 provides support for storing and exchange of design rules. A key focus of the standard is to support long term data retention requirements.

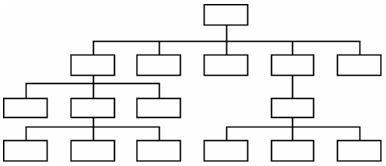
System Standards

AP 212 - Electrotechnical design and installation (Published)



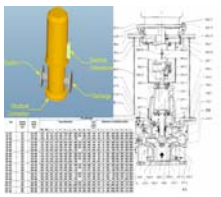
AP 212 is a STEP exchange standard that specifies data representation for electrotechnical plants and industrial systems design information. It addresses electrical product definition necessary to support electrical and cable tray: current analysis; equipment; lighting; cable sizing; electrical connectivity checks; and cable tray interference detection. AP 212 and AP 210 overlap providing capability for design and analysis of electrotechnical systems and modules via STEP.

AP 233 - Systems engineering data representation (In development)



AP 233 addresses the need to exchange system requirements. The scope includes: conformity to the concept of a system; configuration control; requirements, requirement analysis; and functional allocation/ analysis/ behaviour; and physical architecture. AP 233 and AP 210 overlap providing capability for transferring requirements between system engineering and domain engineering environments or for supporting a unified requirements model manager.

AP 239 - Product Lifecycle Support (Published)



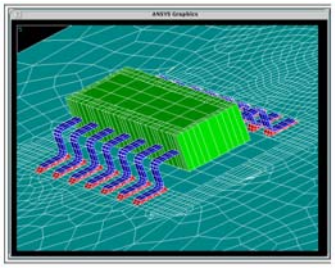
AP 239 addresses support of the system from concept to disposal. It enables you to: request, define, justify, approve, schedule and capture feedback on work activities/resources; document product requirements and configuration as-designed, as-built, and as-maintained; provide feedback on product properties, operating states, behaviour and usage; and define support, facilities, personnel, and organizations for the complete system as deployed.

Mechanical Standards

AP 203 - Configuration controlled 3D designs of mechanical parts and assemblies (Published)

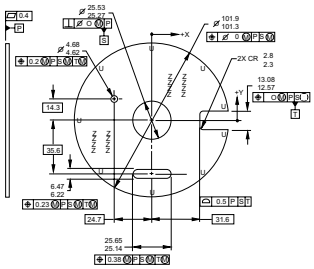
AP 203 is used to exchange geometry, product structure, and configuration management data. Edition 2 adds tolerances, construction history, layers and colors to the 3D exchanges with ISO 10303 re-usable data modules. AP 203 is typically used for enclosure design and the commonality of the structures between AP 203 and AP 210 provide enhanced support for merging ECAD PWA/PWB models and MCAD enclosure model in a coherent design process.

AP 209 - Composite and metal structural analysis and related design (Published)



AP 209 specifies computer-interpretable composite and metallic structural product definition data representation such as: shape, idealized analysis shape, finite element analysis (FEA) model, analysis results, and material properties. The design and related analysis information are managed within a PDM product structure. AP 209 can support detailed analysis of mechanical properties of interconnect substrates and assemblies when the design information is contained in an AP 210 model.

AP 219 - Dimensional Inspection (In development)



AP 219 will specify information requirements to manage dimensional inspection of solid parts or assemblies, which includes administering, planning, and executing dimensional inspection as well as analyzing and archiving the results. Dimensional inspection can occur at any stage of the life cycle of a product where checking for conformance with a design specification is required. Of interest to the electronics community is electrical and mechanical component and interconnect substrate inspection automation is seamlessly connected between AP 210 and AP 219 since they both use STEP integrated structures for common concepts.

Catalog Standards

ISO 13584 Parts libraries and catalogs (PLIB) (Published)

PLIB supports exchange of parts catalogue information between external vendors and internal engineering and procurement catalogs. AP 210 supports references to PLIB catalog data.

AP 210 - Electronic assembly, interconnect and packaging design (Published)

AP 210 includes specific information mappings needed to integrate catalog data with netlist, functional, footprint, breakout, and physical component models.

Data and Information

Note: The use of the word “data” included in this brief is a reference to the formal description of the standard. A more recently constructed description of the STEP standards would replace “data” with “information” as the “data models” are describing information to be exchanged or shared between applications.

Additional Information

Additional information on ISO 10303 parts is at:
ISO TC 184/SC 4 On-Line Information Service for STEP and PLIB - http://www.tc184-sc4.org/
ISO Catalog - http://www.iso.org/iso/en/CatalogueListPage.CatalogueList
ANSI Catalog - http://webstore.ansi.org/ansidocstore/default.asp/
PDES, Inc. - http://pdesinc.aticorp.org/
ProSTEP iViP Association - http://www.prostep.org/en/
Product Lifecycle Support, Inc. - http://www.plcsinc.org/
AP210 information – http://www.wikistep.org

revision 2006-06-01