

## I-DEAS® Master Drafting™

I-DEAS Master Drafting software is used by engineers, designers, drafters, and detailers to create detailed production mechanical drawings. I-DEAS Master Drafting can be used as a documentation tool in two basic ways:

- As a tool for documenting solid models created in I-DEAS Master Modeler™, and creating associative drawings.
- As a standalone high-performance 2D drafting system, and creating standalone drawings.

I-DEAS Master Drafting uses the Dynamic Navigator™ style of user interaction which delivers an innovative style of CAD operation. Orthographic, section, detail, and auxiliary views are easily created from the master model geometry along with dimensions and Geometric Dimensioning and Tolerancing (GD&T) symbology. Drawings are bi-directionally associative to the master model, and the integrated data management system tracks drawings and maintains relationships to the models from which they were created.

As a standalone system, I-DEAS Master Drafting not only provides complete detailing capability, but functions effectively for concept design as well. Variational sketching provides broad capability for geometry creation and captures design intent to ease design change. A dynamic icon palette and the Dynamic Navigator make I-DEAS Master Drafting exceptionally easy to learn. It is an excellent starting point for organizations transitioning to solids-based design from traditional systems. Users can rapidly master I-DEAS Master Drafting, and achieve measurable productivity gains over previously used tools. As appropriate, these users can grow directly into solid modeling without losing data.

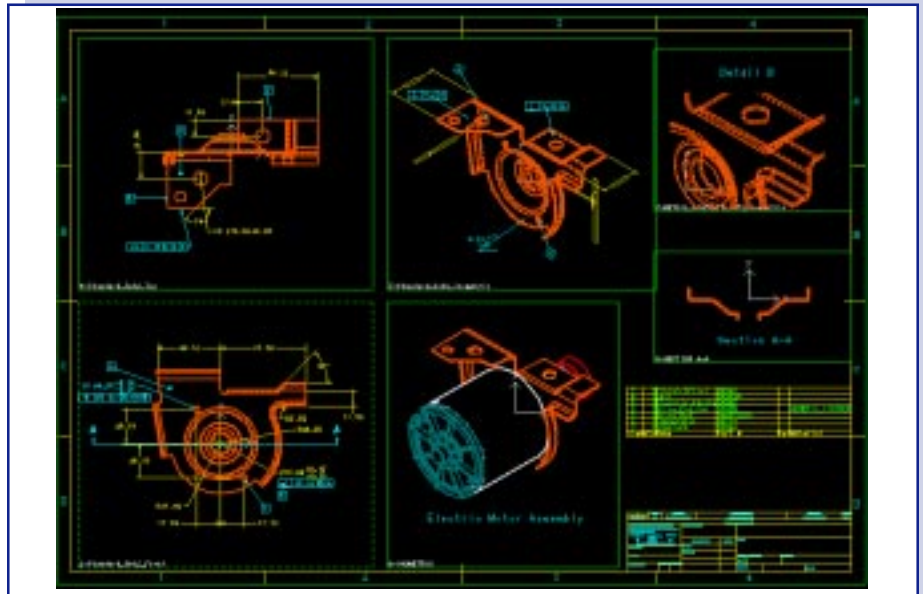
## Solids-based Associative Drawings

For organizations that use a solids-based approach to design, I-DEAS Master Drafting provides many advantages, including the integration with I-DEAS Master Modeler, I-DEAS Master Assembly™, and I-DEAS Master Notation™. I-DEAS Master Drafting provides unsurpassed capability in several areas.

- Access to the solid model. I-DEAS Master Drafting provides free access to the solid model while creating a drawing. This model window assists users with creating new views, which may track and follow solid geometry. It also provides a means to see the master model and understand its topology and documentation requirements, without the need to access other modules.
- Concurrent Associativity allows a drafter to start a drawing from the master model before the design is complete, allowing designers and drafters to work

concurrently on the same design. Subsequent design changes to the master model can be used to update the drawing.

- A truly Independent drawing is created which can be accessed, modified, and completed without the need to retrieve the solid model or assembly. With this capability to be independent, the drawing becomes a light weight tool to document the design, and makes changes to the drawing faster and easier.
- 3D Model Views created in I-DEAS Master Notation can easily be placed on any drawing, providing one of the fastest ways to create a drawing that documents the solid design.
- Associativity to the I-DEAS Master Notation Model Views allows you to change the 3D annotation on the solid model and automatically update the drawings at the users discretion.
- Single or dual user implementation allows one user (designer/draftsperson) to design and make drawings, or a



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different user (designer) to design, and another user(drafter) to develop drawings.

- Bi-directional associativity with I-DEAS Master Modeler and I-DEAS Master Assembly allows you to change the part or assembly and automatically update the drawings, or to change the drawing and the master model will update.
- Knowledge of the solid is embedded within the drawings that document solid models. This allows the drawing to extract precise dimensional information directly from the solid geometry, and to loyally track the geometry through any changes it may undergo.

### High-Performance Detailing

I-DEAS Master Drafting provides you with many tools to fully document your solid designs. All geometry details don't need to be modeled in the I-DEAS Master Modeler; additional geometry can easily be added to adequately detail the design for such characteristics as tapped threads, screw head types, etc. Geometry can be created in I-DEAS Master Drafting, incorporated from user-defined symbol catalogs, or retrieved from the optional I-DEAS Master Drafting Symbols Catalog™ software.

I-DEAS Master Drafting offers a wide variety of dimensioning techniques which use the Dynamic Navigator style of user interaction. As you traverse the drawing, geometry entities are highlighted. Appropriate icons are displayed next to the cursor which represent the dimensions that can be added to entities simply by picking with the cursor. This innovative approach reduces menu selection and picking, and significantly improves the productivity of the dimensioning function. Dimensioning within I-DEAS Master Drafting supports the international standards ANSI, ISO, DIN, BSI, and JIS. With a simple selection of the standard you want, all your dimensions will have the appropriate characteristics, such as arrowhead style, decimal type, etc.

Notes and text needed to complete your drawing are easily added with an integrated paragraph text editor. A local language editor can be integrated so that notes in international character sets can be created directly in the I-DEAS Master Drafting session. Text in a separate UNIX window can be interactively copied and placed directly on the drawing. Also, text from the Windows NT clipboard can be copied and placed directly on the drawing. This "copy and paste" style integration allows data to flow freely between I-DEAS Master Drafting and other applications you may have on the workstation.

- Excellent responsiveness - even with large drawings. This is enhanced through the ability to access drawings independently from the master model or master assembly geometry.
- Dynamic pan and zoom with 100,000:1 zoom ratio.
- Design Detailing:
  - Full complement of geometry creation capabilities for adding design detail not created in the master model.
  - Modifiable line weights (thin, medium, thick, user-defined).
  - Modifiable line fonts (standard and user-defined).
  - Cutting plane lines and break marks.
  - Associative crosshatching with the ability to recognize internal holes and islands, while using a library of standard hatching patterns or a user-defined pattern.
  - Standard and user-defined symbols with dynamic placement and the ability to nest, scale, rotate, and mirror.
- User-definable symbols with attributes.
- Optional I-DEAS Master Drafting Symbols Catalog software can be modified. It contains drawing formats, nuts, bolts, washers, screws, springs, weld and surface finish symbols, and more.
- Dynamic Dimensioning
  - Dimensions automatically inherited from I-DEAS Master Modeler or I-DEAS Master Assembly.

- Dimensions are associated with geometry; they change when geometry is changed, and can update the master model.
- Dimensions may be moved from one view to another.
- Complete control of dimension text size, style, alignment, and gap spacing.
- Dynamic repositioning, editing, placement, and automatic respacing.
- Dimension types-linear, angular, radial, diametral, ordinate, chamfer, curve length.
- Dimension styles-single, chained, stacked, datum, ordinate, and arrow ordinate.
- Dual dimensions (English and metric).
- Intelligent witness-line breaks.
- Multiple arrowhead styles.
- Pre- and post-text.
- Single or dual tolerances; limit dimensions.
- Annotation in local languages includes full paragraph text and European character support for English characters. Local language editors are capable of running directly in the Drafting session for Asian or other special character set languages. Multiple text fonts and user-definable text sizes are available.
- Geometric Dimensioning and Tolerancing (GD&T) creation:
  - Inherit GD&T from the master model or master assembly.
  - Affiliate GD&T with drawing including callouts, datum targets, geometric tolerancing, and surface finish.
  - Automatic construction with a minimum of data input, editing facilities.
- Product and Manufacturing Information Symbology
  - I-DEAS Master Drafting enables you to place the full range of welding symbols on drawings, conforming to either ANSI or ISO standards.
  - Locator symbols are also supported, giving complete flexibility in creating and using these standard annotation features.
  - Choose view direction, or choose from common layout types such as "front,"

“top,” etc., or set up orthographic views in first or third angle projection, isometric, auxiliary, or true views.

- Multiple views of one or more parts or assemblies can be placed on one drawing or multiple drawings, or on multiple sheets.
  - Automatic hidden line creation, either removed or dashed.
  - Border, title block, or complete drawing format may be added.
  - Specify different layers for different entities.

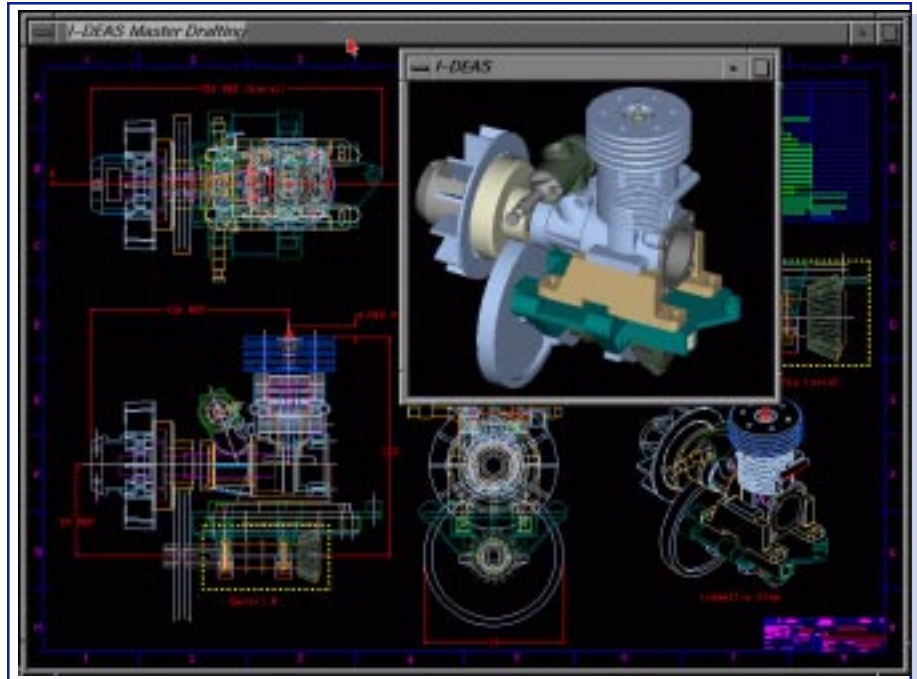
### Bill of Materials

I-DEAS Master Drafting software provides a dynamic Bill of Materials (BOM) that is also available within I-DEAS Master Assembly. This BOM information can be printed, saved to an external file, or used directly on a drawing. Any changes to the assembly design (hierarchy, material, names, numbers, quantity, attributes, revisions, etc.) automatically update the BOM on the drawing at the users discretion. This ensures that the BOM always accurately reflects the information in your 3D product design.

Balloons can easily be added to the drawing during BOM creation, or at a later time after the BOM has been created. Selection of a line item in the BOM initiates a controlled selection of only the geometry that belongs to that specific component on the drawing. This provides an accurate placement and target for the balloons.

### Drawing Management

I-DEAS Master Drafting includes the I-DEAS Team Data Manager™ integrated drawing management capabilities. You can start by easily searching for a drawing by its file name, any title block information that the user sets (title, part number, part name, drafter’s name, etc.), or project name. You can manage all of your drawings, whether associated to a solid model, or just a standalone 2D drawing. You can determine which master model every drawing came from, or see all of the drawings that came from a particular master model.



*I-DEAS Master Drafting provides free access to the solid model while creating a drawing.*

- List the master model associated to a drawing.
- List all drawings associated to a particular master model.
- Search for drawings by name, number, author, etc.
- Store drawings in libraries.
- Track drawing states (in-design, check, released, etc.).
- Track revisions and versions.
- Attributes that appear on the drawing can be modified via I-DEAS Team Data Manager, without the need to access the drawing with I-DEAS Master Drafting.

The I-DEAS Team Data Manager also allows you to configure a project’s drawing access privileges to actively notify the affected users of any changes that have been made. As a drawing moves through your design process, the drawing management tools allow you to move it from “state to state” and advance it from the

designer, to the detailer, to the checker, or manager. You can attach an Engineering Change Order (ECO) to a drawing or a part. The ECO could be in the form of text instructions, a drawing showing changes, or any type of file. This means that your ECO could be a written explanation, or even a sketch, to best communicate to others what changes are needed. I-DEAS Team Data Manager software provides the following additional capabilities:

- Define and query design states of a drawing.
- Project configurations.
- Active notification of design changes.
- ECO creation and tracking.

For more information on the I-DEAS Team Data Manager, refer to General Capabilities section of the Product Catalog.

## Standalone Power Drafting

I-DEAS Master Drafting functionality is available for standalone implementation without the requirement of any other I-DEAS module. This allows you to tailor your software acquisition to meet your specific needs, purchasing only what you need and nothing more. The integrated drawing management, combined with extensive geometry creation capabilities, are available with the standalone system to make I-DEAS Master Drafting a substantial design tool in its own right.

- Variational sketching with Dynamic Navigator:
  - Presents relevant options for sketching.
  - Provides feedback on geometry creation, editing, constraint placement, and dimensioning.
  - Lets you sketch in a dimensionless mode then applies constraints.
  - Real-time, dimension-driven drawing changes.
  - Geometric and dimensional constraints.
  - Equational relationships between constraints.
  - Unconstrained geometry and all constraints can be displayed.
- Complete 2D geometry creation including:
  - General arc, spline, and ellipse creation with ability to dynamically edit and manipulate.
  - Flexible trimming options.
  - Chamfer and filleting between combinations of lines, arcs, ellipses, and splines with flexible trimming options.
  - Special geometry creation techniques, including double lines, offset curves, circular and rectangular arrays, etc.
  - Dynamic dragging.
- Create entities by projecting multiple geometry from a view into all other views, and automatically providing the silhouette lines and connecting the edges. This extremely powerful technique virtually removes the need for most construction geometry and can save hours of drawing time.

- Measurements and Calculations:
  - Properties calculations - Measured distance and angle, perimeter, area, moments, and products of inertia about centroid, XY axis, and origin; radius of gyration; polar moment of inertia; generate point entity at centroid.

## Customization

I-DEAS Master Drafting provides capabilities for modifying the system to company requirements. It lets you customize the icons to better fit your needs, create macros to automate tasks, or build application programs. Whatever your requirements, the customization capabilities are easy enough to be used by the beginner, yet powerful enough to meet the needs of the experienced programmer.

- Company-specific standard drawing formats.
- Site-definable defaults.
- User-definable icons and multiple, user-defined icon panels.
- Complete programming language.
- Batch mode.

## Translators

I-DEAS Master Drafting includes functionality to allow you to exchange data with other CAD and CAM systems via 2D IGES and 2D DXF translators. Optional modules also provide direct translation to and from CADAM, and to and from AutoCAD DWG.

These capabilities allow I-DEAS Master Drafting to co-exist with other CAD systems or to be used by organizations transitioning from other systems. These data exchange capabilities let you retain the investment already made in CAD data. The I-DEAS 2D Drafting Data Translators provide the opportunity for:

- Migration from another CAD product to the engineering power of I-DEAS. Here the translators can be used to migrate all or a portion of a company's drafting requirements from another CAD products

to I-DEAS Master Drafting. With I-DEAS Master Drafting, these companies will be able to enjoy the productivity benefits of the Dynamic Navigator, associative annotation, related projectable views, variational geometry, and many other advanced drafting features.

- Growth to solids-based, team-oriented mechanical automation. Here the translators can be used by a company as an initial step in the evolution from an existing CAD toolset to the engineering solution provided by I-DEAS. In the initial step, existing 2D-based drafting and design data is translated to I-DEAS Master Drafting. Once translated, the I-DEAS Master Drafting user has the opportunity to migrate to the I-DEAS Master Modeler where existing 2D data can be directly used to create solid models.
- Exchanging data with suppliers and other vendors using other CAD products. The I-DEAS 2D Drafting Data Translators can provide new opportunities for I-DEAS customers to work with prime contractors or leverage subcontractors who already perform their drafting and design tasks using another CAD product. Complement an existing CAD installation with I-DEAS for any combination of advanced drafting productivity, solids-based design, analysis, optimization, or other team-oriented engineering capabilities offered by I-DEAS.

## I-DEAS 2D Drafting IGES Data Translator

To move 2D drafting and design data between I-DEAS and the industry-standard IGES format, SDRC offers data translator software that provides accurate bi-directional exchange of data between I-DEAS Master Drafting software and the IGES standard.

The I-DEAS 2D Drafting IGES Data Translator supports translation of I-DEAS Master Drafting entities including geometry, annotation, associative dimensions, Bill of Materials attributes, symbols, and views. During IGES export translation, the translator supports the optional user entry of IGES Start and Global information. The IGES Global information includes the definition of author, organization, product ID, receiver ID, and receiver filename.

During import, the I-DEAS 2D Drafting IGES Data Translator provides user control over how certain entities like dimensions and special types of annotation are translated into I-DEAS Master Drafting.

### **I-DEAS DXF Data Translator**

To move 2D drafting and design data between I-DEAS and the DXF format, SDRC offers data translator software that bi-directionally exchanges data between I-DEAS Master Drafting and the DXF standard. The I-DEAS DXF Data Translator software provides accurate, bi-directional data translation between I-DEAS Master Drafting and AutoCAD as well as other CAD systems supporting the DXF standard. The translator creates complete drawings in either direction of conversion, handling such special DXF entities as Blocks, Layers, and Inserts.

- Complement an existing AutoCAD or other PC CAD product with I-DEAS for any combination of advanced drafting productivity, solids-based design, analysis, optimization, or other team-oriented engineering capabilities offered by I-DEAS software.

### **Prerequisite**

None

### **For More information**

For more information, contact your local SDRC representative or call 1-800-848-7372.