

SOLIDWORKS®

SOLIDWORKS Electrical: 3D

Dassault Systèmes SolidWorks Corporation
175 Wyman Street
Waltham, MA 02451 U.S.A.

© 1995-2016, Dassault Systemes SolidWorks Corporation, a Dassault Systèmes SE company, 175 Wyman Street, Waltham, Mass. 02451 USA. All Rights Reserved.

The information and the software discussed in this document are subject to change without notice and are not commitments by Dassault Systemes SolidWorks Corporation (DS SolidWorks).

No material may be reproduced or transmitted in any form or by any means, electronically or manually, for any purpose without the express written permission of DS SolidWorks.

The software discussed in this document is furnished under a license and may be used or copied only in accordance with the terms of the license. All warranties given by DS SolidWorks as to the software and documentation are set forth in the license agreement, and nothing stated in, or implied by, this document or its contents shall be considered or deemed a modification or amendment of any terms, including warranties, in the license agreement.

Patent Notices

SOLIDWORKS® 3D mechanical CAD and/or Simulation software is protected by U.S. Patents 6,219,049; 6,219,055; 6,611,725; 6,844,877; 6,898,560; 6,906,712; 7,079,990; 7,477,262; 7,558,705; 7,571,079; 7,590,497; 7,643,027; 7,672,822; 7,688,318; 7,694,238; 7,853,940; 8,305,376; 8,581,902; 8,817,028; 8,910,078; 9,129,083; 9,153,072; 9,262,863; 9,465,894 and foreign patents, (e.g., EP 1,116,190 B1 and JP 3,517,643).

eDrawings® software is protected by U.S. Patent 7,184,044; U.S. Patent 7,502,027; and Canadian Patent 2,318,706.

U.S. and foreign patents pending.

Trademarks and Product Names for SOLIDWORKS Products and Services

SOLIDWORKS, 3D ContentCentral, 3D PartStream.NET, eDrawings, and the eDrawings logo are registered trademarks and FeatureManager is a jointly owned registered trademark of DS SolidWorks.

CircuitWorks, FloXpress, PhotoView 360, and TolAnalyst are trademarks of DS SolidWorks.

FeatureWorks is a registered trademark of Geometric Ltd.

SOLIDWORKS 2017, SOLIDWORKS Standard, SOLIDWORKS Professional, SOLIDWORKS Premium, SOLIDWORKS PDM Professional, SOLIDWORKS PDM Standard, SOLIDWORKS Workgroup PDM, SOLIDWORKS Simulation Standard, SOLIDWORKS Simulation Professional, SOLIDWORKS Simulation Premium SOLIDWORKS Flow Simulation, eDrawings Viewer, eDrawings Professional, SOLIDWORKS Sustainability, SOLIDWORKS Plastics, SOLIDWORKS Electrical Schematic Standard, SOLIDWORKS Electrical Schematic Professional, SOLIDWORKS Electrical 3D, SOLIDWORKS Electrical Professional, CircuitWorks, SOLIDWORKS Composer, SOLIDWORKS Inspection, SOLIDWORKS MBD, SOLIDWORKS PCB powered by Altium, SOLIDWORKS PCB Connector powered by Altium, and SOLIDWORKS Visualization are product names of DS SolidWorks.

Other brand or product names are trademarks or registered trademarks of their respective holders.

COMMERCIAL COMPUTER SOFTWARE - PROPRIETARY

The Software is a "commercial item" as that term is defined at 48 C.F.R. 2.101 (OCT 1995), consisting of "commercial computer software" and "commercial software documentation" as such terms are used in 48 C.F.R. 12.212 (SEPT 1995) and is provided to the U.S. Government (a) for acquisition by or on behalf of civilian agencies, consistent with the policy set forth in 48 C.F.R. 12.212; or (b) for acquisition by or on behalf of units of the Department of Defense, consistent with the policies set forth in 48 C.F.R. 227.7202-1 (JUN 1995) and 227.7202-4 (JUN 1995).

In the event that you receive a request from any agency of the U.S. Government to provide Software with rights beyond those set forth above, you will notify DS SolidWorks of the scope of the request and DS SolidWorks will have five (5) business days to, in its sole discretion, accept or reject such request. Contractor/Manufacturer: Dassault Systemes SolidWorks Corporation, 175 Wyman Street, Waltham, Massachusetts 02451 USA.

Copyright Notices for SOLIDWORKS Standard, Premium, Professional, and Education Products

Portions of this software © 1986-2016 Siemens Product Lifecycle Management Software Inc. All rights reserved.

This work contains the following software owned by Siemens Industry Software Limited:

D-Cubed® 2D DCM © 2016, Siemens Industry Software Limited. All Rights Reserved.

D-Cubed® 3D DCM © 2016, Siemens Industry Software Limited. All Rights Reserved.

D-Cubed® PGM © 2016, Siemens Industry Software Limited. All Rights Reserved.

D-Cubed® CDM © 2016, Siemens Industry Software Limited. All Rights Reserved.

D-Cubed® AEM © 2016, Siemens Industry Software Limited. All Rights Reserved.

Portions of this software © 1998-2016 Geometric Ltd.

Portions of this software incorporate PhysX™ by NVIDIA 2006-2010.

Portions of this software © 2001-2016 Luxology, LLC. All rights reserved, patents pending.

Portions of this software © 2007-2016 DriveWorks Ltd.

© 2011, Microsoft Corporation. All rights reserved.

Includes Adobe® PDF Library technology

Copyright 1984-2016 Adobe Systems Inc. and its licensors. All rights reserved. Protected by U.S. Patents 5,929,866; 5,943,063; 6,289,364; 6,563,502; 6,639,593; 6,754,382; Patents Pending.

Adobe, the Adobe logo, Acrobat, the Adobe PDF logo, Distiller and Reader are registered trademarks or trademarks of Adobe Systems Inc. in the U.S. and other countries.

For more DS SolidWorks copyright information, see **Help > About SOLIDWORKS**.

Copyright Notices for SOLIDWORKS Simulation Products

Portions of this software © 2008 Solversoft Corporation.

PCGLSS © 1992-2016 Computational Applications and System Integration, Inc. All rights reserved.

Copyright Notices for SOLIDWORKS PDM Professional Product

Outside In® Viewer Technology, © 1992-2012 Oracle

© 2011, Microsoft Corporation. All rights reserved.

Copyright Notices for eDrawings Products

Portions of this software © 2000-2014 Tech Soft 3D.

Portions of this software © 1995-1998 Jean-Loup Gailly and Mark Adler.

Portions of this software © 1998-2001 3Dconnexion.

Portions of this software © 1998-2014 Open Design Alliance. All rights reserved.

Portions of this software © 1995-2012 Spatial Corporation.

The eDrawings® for Windows® software is based in part on the work of the Independent JPEG Group.

Portions of eDrawings® for iPad® copyright © 1996-1999 Silicon Graphics Systems, Inc.

Portions of eDrawings® for iPad® copyright © 2003 – 2005 Apple Computer Inc.

Copyright Notices for SOLIDWORKS PCB Products

Portions of this software © 2016 Altium Limited.

Contents

Introduction:

About This Course	2
Prerequisites	2
Course Design Philosophy	2
Using this Book	2
About the Training Files	3
Windows® 7	3
Conventions Used in this Book	4
Use of Color	4
Graphics and Graphics Cards	4
Color Schemes	5
More SOLIDWORKS Training Resources	5
Local User Groups	5

Lesson 1: Assembly Creation

What are Assemblies?	8
Stages in the Process	8
Unarchiving a Project	10
Opening an Existing Project in SOLIDWORKS	10
The Electrical Project Documents	11
SOLIDWORKS Assembly	12
Opening a SOLIDWORKS File from the Browser	13
Exercise 1: Assembly Creation	17

Lesson 2: Cabinets, Ducts, Rails

Cabinets, Ducts, Rails	20
Adding a Cabinet	20
Stages in the Process	20
Inserting Components	23
Naming	23
Inserting Rails	23
Mate References	23
Change Rail or Duct Length	26
Inserting Ducts	26
Mates	28
Exercise 2: Cabinets	30

Lesson 3: Component Intelligence

What is a component?	32
Component Intelligence	32
The Electrical Component Wizard	33
Stages in the Process	33
Define Faces	34
Create Mate Reference	36
Create Connection Points	37
Creating Cable Connection Points	43
Exercise 3: Component Intelligence	45

Lesson 4: Insert Components

Insert Components	50
Stages in the Process	50
Align Components	53
Inserting Terminals	55
Exercise 4: Insert Components	56

Lesson 5: Routing Wires

Routing Wires	60
Stages in the Process	60
Routing Path	63
Sketch Name	63
Route Wires	65
3DSketch Route	65
Routing Parameters	66
Wire Sketches	67
SOLIDWORKS Route	68
Wire Segregation	69
Exercise 5: Routing Wires	72

**Lesson 6:
Routing Cables**

Routing Cables	76
Stages in the Process.....	76
Creating Cable Connection Points	77
Route Cables.....	79
Set Origin Destination of Cables by Location	80
Exercise 6: Routing Cables.....	83

**Lesson 7:
3D Error Analysis**

Design Rule Checks	86
Stages in the Process.....	86
Manufacturer Part Not Inserted	88
Manufacturer Part Inserted Twice.....	89
Missing Connection Point.....	90
Incorrect CPoint Route Type	91
No Valid Path	92
Wrong Wire Properties	94
Exercise 7: 3D Error Analysis	95
False Positives.....	96