Allegro to PADS® Translator User's Guide

PADS 9.3.1

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Chapter 1
Migrating Cadence Allegro Designs

The Allegro to PADS Layout translator is one of a group of translators included with the PADS PCB Design Tools. It is installed with PADS Layout.

You can use this translator to migrate Cadence Allegro designs to PADS Layout.

Tip: To find the version number of the translator, click the translator icon in the title bar o, and select About Translator.

Restrictions

- Allegro designs must be prepared for translation using the Cadence Allegro PCB Editor in at least the XL version.

- Only the "electrical" type data is translated.

Supported Versions

The translator supports up to version 16.3 of Allegro PCB.

Migrating Allegro Designs to PADS Layout

To perform the migration, you must have access both to PADS Layout and to the Cadence Allegro PCB Editor in at least the XL version. If both applications reside on the same machine, use Procedure 1 to migrate the design. If they are on different machines, use Procedure 2.

Procedure 1—PADS and Allegro on the Same Machine

Perform the following steps to migrate an Allegro design to PADS Layout when PADS Layout and Allegro PCB Editor reside on the same machine:

1. Prepare the Allegro design(s) for migration, as follows:

    a. Copy the contents of the *<PADS install dir>*\SDD_HOME\translators\skill_scripts folder to the $HOME\pcbenv folder.

    b. For each design you want to translate:

        i. Create a new folder (...myboards_*<boardID>*), for example), and copy into it the Allegro design (.brd) file you want to migrate.

    ii.   Open the design file, and in the Allegro command prompt window enter these command lines:

```
Command> skill load "dfl_main" (include quotes)
Command> main out
```

    iii.   In the Allegro to Expedition Translator dialog box, click the **Start One Way Translation** button.

    iv.   When the SKILL script has completed, if any errors were found, fix them and rerun the SKILL script. The migration will not complete correctly if all errors are not fixed.

2. Migrate the prepared Allegro design(s) to PADS Layout.

   Tip: If you're migrating only a single design including attributes, use the File > Import command in PADS Layout instead of the following procedure. After the design is migrated, it is automatically opened in PADS Layout. If you are migrating multiple designs, or want to choose whether to translate attributes or not, perform the following steps:

   a. From the Start Menu, run the Allegro to PADS Translator.

   b. In the Allegro Designs Translator dialog box:

     i.   Identify the location where you want the translated files placed.

     ii.   Use the Add button to specify the files you want to translate.

     iii.   Specify whether or not to translate attributes.

     iv.   Click the **Translate** button. The output filename(s) will be in the format

        `design_#########.pcb`.

Procedure 2—PADS and Allegro on Different Machines

Perform the following steps to migrate an Allegro design to PADS Layout when PADS Layout and Allegro PCB Editor reside on different machines:

1. On the Allegro machine, prepare the Allegro design(s) for migration, as follows:

   a. Copy the contents of the *<PADS install dir>*\SDD_HOME\translators\skill_scripts folder on the PADS machine to the $HOME\pcbenv folder.

   b. Copy *<PADS install dir>*\SDD_HOME\translators\win32\bin\tech_translator.exe on the PADS machine to the $HOME\pcbenv folder.

   c. Set the AEX_BIN_ROOT environment variable to point to $HOME\pcbenv.

   d. For each design you want to translate:

     i.   Create a new folder (...myboards_*<boardID>*), for example), and copy into it the Allegro design (.brd) file you want to migrate.

    ii.   Open the design file, and in the Allegro command prompt window enter these command lines:

```
Command> skill load "dfl_main" (include quotes)
Command> main out
```

   iii.   In the Allegro to Expedition Translator dialog box, click the **Start One Way Translation** button.

   iv.   When the SKILL script has completed, if any errors were found, fix them and rerun the SKILL script. The migration will not complete correctly if all errors are not fixed.

  e. Copy all the prepared design folders (...myboards_*<board*>*) to the PADS machine.

2. On the PADS machine, migrate the prepared Allegro design(s) to PADS Layout.

Tip: If you're migrating only a single design and including attributes, use the File > Import command in PADS Layout instead of the following procedure. After the design is migrated, it is automatically opened in PADS Layout.
If you are migrating multiple designs, or want to choose whether to translate attributes or not, perform the following steps:

  a. From the Start Menu, run the Allegro to PADS Translator.

  b. In the Allegro Designs Translator dialog box:

     i.   Identify the location where you want the translated files placed.

    ii.   Use the Add button to specify the files you want to translate.

   iii.   Specify whether or not to translate attributes.

   iv.   Click the **Translate** button. The output filename(s) will be in the format `design_#########.pcb`.

Related Topics

Error Codes and Log Messages

Chapter 2
Allegro to PADS Layout Translation Notes

This chapter describes differences between Allegro file content and PADS Layout file content, and possible discrepancies that can occur in translation.

Zero Size Pads

Allegro zero size pads are not supported by the translator. As a workaround, you can resize them to make them as small as possible (1 DBU), and put a message in the log file stating what these pads are.

Decals and Design Graphics

Decals generated during the translation do NOT contain all the pertinent information that existed in Allegro (for example, notes, some graphics, etc). Therefore check the translated design closely.

Board Outline

Board outlines must be contiguous in Allegro to successfully translate into PADS. Check the board outline in Allegro to ensure that there are no gaps or opens.

SMD Edge Connectors

An outstanding bug exists when sometimes the translator does not handle double-sided SMD edge connectors correctly. If the design has one of these connectors please double-check it after the translation in PADS. This problem typically occurs on designs that have an AGP / PCI type connector.

Lack of Memory

Due to Windows OS limitations, the translator cannot allocate more than 2GB of memory. If you are translating a very large design, the translator may run out of memory and display an "Unable to allocate enough memory to translate current design" message.

The suggested workaround is to configure Windows to provide 3GB virtual address space. To do this:

1. Add /3GB to the Windows boot.ini file as described at
   http://www.microsoft.com/whdc/system/platform/server/PAE/PAEmem.mspx.

2. Reboot your computer and start the translation again.

Create_devices Failure

SKILL scripts use the Allegro create_devices command to export device files to ...\devices in the design directory. If this command fails, data export cannot complete successfully. To complete the data export process, you must fix the design board to make the create_devices command work.

One example of this problem is Allegro device names containing an equals sign (=). When the SKILL script encounters such a name, it removes the equals sign, which causes the Allegro create_devices command to fail. To resolve this problem, you must do one of the following:

- Edit the device name in the Allegro schematic and forward annotate it to the board.

- Remove the device from the Allegro design.

Another example is device names longer than 32 characters. This causes a problem with exporting devices. If your job has device names that are longer than 32 characters, set the Allegro environment variable ALLEGRO_LONG_PACKAGE_NAME to TRUE.

Exclamation mark (!) in the Design Board Path

SKILL scripts create a temporary Allegro macro file with commands exporting part of the data. If the design board path contains an exclamation mark (!), the temporary macro file name also contains an exclamation mark; this causes the SKILL script to try to execute the temporary macro file with the replay command.

Disabling Board Refresh while Exporting Data with SKILL Scripts

For better performance, design board refresh is disabled while exporting data from Allegro with SKILL scripts.

Allegro to PADS Mapping Table

The following table shows the translation mapping of Allegro elements to PADS.

Table 1: Allegro to PADS Mapping Table

From Allegro Element:	To PADS Element:
Layers	
Assy_Line	Not Supported
Board Outline	Board Outline object
Break Outs	Traces & Vias (Fanouts)
Component_Body Outline_1	User layer (Component Body Outline_1)
Component_Body Outline_2	User layer (Component Body Outline_2)
DAM	Not Supported
Dielectric	Not Supported
Dimension_Keepout	Not Supported
Drill	Not Supported
Error	Not Supported
Fixture_Outline	Not Supported
Force	Not Supported
Glue_Mask_1	Not Supported
Glue_Mask_2	Not Supported
Head_Insertion	Not Supported
Insertion_Machine_Keepout	User layer (Insertion)
Milling	Not Supported
One-Way_Region	User layer (One Way Region)
Panel_Outline	Not Supported
Paste_Mask_1	Paste Mask Top
Paste_Mask_2	Paste Mask Bottom
Place_1	Layer 20 (Placement Outline)
Place_2	Layer 20 (Placement Outline)
Placement_Keepout_1	User layer
Placement_Keepout_2	User layer

Table 1: Allegro to PADS Mapping Table

From Allegro Element:	To PADS Element:
Placement_Region_1	User layer
Placement_Region_2	User layer
Power	Plane Layer
Prepreg	Not Supported
Probe_1 and Probe_2	Not Supported
Probe_Area	Not Supported
Probe_Symbol	Not Supported
Routing_Keepout	Keepout (Trace & Via)
Shape_Edit	Not Supported
Sheet_Dielectric	Not Supported
Signal_X	Layer (Signal)
Silkscreen_1	Silkscreen Outline Top
Silkscreen_2	Silkscreen Outline Bottom
Solder_Paste_1	Paste Mask Top
Solder_Paste_2	Paste Mask Bottom
Soldermask_1	Soldermask Top
Soldermask_2	Soldermask Bottom
Test Points	Test Points
TestPoint_Keepout	Not Supported
TestPoint_Outline	Not Supported
TestPoint_Reference	Not Supported
Thermal	Supported
Trace Keepout	Keepout (Trace)
User Defined Layer	User layer
Via Keepout	Keepout (Via)
Fabrication	
Aperture Table	Not Supported
Artwork Format	Not Supported
Artwork Simulation	Not Supported
Artwork Stackup	Not Supported

Table 1: Allegro to PADS Mapping Table

From Allegro Element:	To PADS Element:
Drill Data	Not Supported
Drill Simulation	Not Supported
Drill Table	Not Supported
Mill Table	Not Supported
Fills, Keepouts, Planes	
Area Fills	Copper Pour or Plane Area
Area Fills (Protected)	Copper Pour or Plane Area
Area Fill Tie Bar and Cutouts	Not Supported
Classic Area Fills	Copper Pour or Plane Area
Cutouts	Copper Keepout
Cutouts (Protected)	Copper Keepout
No Connect Rules	Not supported
Placement Outline	Not Supported
Power Fill	Plane Layer
Route Keepout	Keepout (Trace)
Signal Layer	Electrical Layer
Split Power Planes	Plane Layer
Trace Keepout	Keepout (Trace)
Via Keepout	Keepout (Via)
Visual-Text, Shapes, etc.	
Color map settings	Not Supported
Component Ref. Des. (Top)	Ref. Des. on Silkscreen Top
Component Ref. Des. (Bottom)	Ref. Des. on Silkscreen Bottom
Dimensioning	Not Supported
Drill Symbols	Supported
Guides	Not supported
Net Type Patterns	Not Supported
Part Name	Not Supported
Pin Ref. Des.	Pin Numbers
Shapes on User Defined Layers	Shapes on User Layers

Table 1: Allegro to PADS Mapping Table

From Allegro Element:	To PADS Element:
Shapes on Route Layers	Shapes on Routing Layers
Targets/Registration Marks	Graphics on User Layers
Text on User Defined Layer	Text on User Layer
Text on Route Layer	Text (Keepout)
Parts, Traces & Vias	
Blind Padstacks	SMD Padstacks
Blind/Buried Vias	Buried Vias
Blind/Buried Vias (Protected)	Buried Vias
Break Outs	Traces & Vias
Break Outs (Protected)	Traces & Vias
Breakouts (Component)	Traces
Buried Padstacks	Only for 2 pin parts, maps to Buried Part
Component Type Rules	Not Supported
Components	Parts
Components (Fixed)	Parts
Components (Protected)	Parts
Drilled Holes	Part Holes
Fixed Components	Parts
Jumpers	Parts
MicroVias	Vias (small diameter)
MicroVias (Protected)	Vias (small diameter)
Mounting Holes	Additional pins in decal
No Cleanup Vias	Vias
Pins (Protected)	Parts
Reuse Block (Primitive)	Treated as single component
Reuse Block (Replica linked)	Components and traces
Reuse Block (Replica un-linked)	Treated as editable components & traces
Reuse Block (Smashed linked)	Components and traces
Reuse Block (Smashed un-linked)	Treated as editable components & traces
Shield Trace	Traces

Table 1: Allegro to PADS Mapping Table

From Allegro Element:	To PADS Element:
Shield Trace (Protected)	Traces
Teardrops	Not Supported
Test Coupon	Not Supported
Test Points	Test Points
Through Padstacks	Through Padstacks
Through Vias	Through Vias
Through Vias (Protected)	Through Vias
Traces	Traces
Traces (Protected)	Traces
Traces in Cell	Not supported
Other	
Component to Component Rules	Supported
Component Type Rules	Not Supported
Highspeed Rules	Not supported
Hybird Objects	Not Supported
MCM Objects	Not Supported
Net Types	Net Classes
Pin Type, SLT	Not Supported
RF Objects	Not Supported
Thermal	Not Supported
Variants	Not Supported

Chapter 3
Error Codes and Log Messages

Table 3-1 is a list of error codes and translator log messages.

Table 3-1. Error Codes and Log Messages

Error code	Explanation
[F]	A fatal error. The translator will terminate. A file was not created due to a problem, setting, or switch that would not allow the file to be translated. A translated file is not created due to the fatal error that was encountered.
[E]	A serious, but non-fatal error. The translator will continue, but you must resolve the problem, and the problem encountered might prevent the file from being useable by Expedition.
[I]	Current status information.
[W]	A warning.

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10. **HAZARDOUS APPLICATIONS.** CUSTOMER ACKNOWLEDGES IT IS SOLELY RESPONSIBLE FOR TESTING ITS PRODUCTS USED IN APPLICATIONS WHERE THE FAILURE OR INACCURACY OF ITS PRODUCTS MIGHT RESULT IN DEATH OR PERSONAL INJURY ("HAZARDOUS APPLICATIONS"). NEITHER MENTOR GRAPHICS NOR ITS LICENSORS SHALL BE LIABLE FOR ANY DAMAGES RESULTING FROM OR IN CONNECTION WITH THE USE OF MENTOR GRAPHICS PRODUCTS IN OR FOR HAZARDOUS APPLICATIONS. THE PROVISIONS OF THIS SECTION 10 SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

11. **INDEMNIFICATION.** CUSTOMER AGREES TO INDEMNIFY AND HOLD HARMLESS MENTOR GRAPHICS AND ITS LICENSORS FROM ANY CLAIMS, LOSS, COST, DAMAGE, EXPENSE OR LIABILITY, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR IN CONNECTION WITH THE USE OF PRODUCTS AS DESCRIBED IN SECTION 10. THE PROVISIONS OF THIS SECTION 11 SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

12. **INFRINGEMENT.**

12.1. Mentor Graphics will defend or settle, at its option and expense, any action brought against Customer in the United States, Canada, Japan, or member state of the European Union which alleges that any standard, generally supported Product acquired by Customer hereunder infringes a patent or copyright or misappropriates a trade secret in such jurisdiction. Mentor Graphics will pay costs and damages finally awarded against Customer that are attributable to the action. Customer understands and agrees that as conditions to Mentor Graphics' obligations under this section Customer must: (a) notify Mentor Graphics promptly in writing of the action; (b) provide Mentor Graphics all reasonable information and assistance

to settle or defend the action; and (c) grant Mentor Graphics sole authority and control of the defense or settlement of the action.

12.2. If a claim is made under Subsection 12.1 Mentor Graphics may, at its option and expense, (a) replace or modify the Product so that it becomes noninfringing; (b) procure for Customer the right to continue using the Product; or (c) require the return of the Product and refund to Customer any purchase price or license fee paid, less a reasonable allowance for use.

12.3. Mentor Graphics has no liability to Customer if the action is based upon: (a) the combination of Software or hardware with any product not furnished by Mentor Graphics; (b) the modification of the Product other than by Mentor Graphics; (c) the use of other than a current unaltered release of Software; (d) the use of the Product as part of an infringing process; (e) a product that Customer makes, uses, or sells; (f) any Beta Code or Product provided at no charge; (g) any software provided by Mentor Graphics' licensors who do not provide such indemnification to Mentor Graphics' customers; or (h) infringement by Customer that is deemed willful. In the case of (h), Customer shall reimburse Mentor Graphics for its reasonable attorney fees and other costs related to the action.

12.4. THIS SECTION 12 IS SUBJECT TO SECTION 9 ABOVE AND STATES THE ENTIRE LIABILITY OF MENTOR GRAPHICS AND ITS LICENSORS FOR DEFENSE, SETTLEMENT AND DAMAGES, AND CUSTOMER'S SOLE AND EXCLUSIVE REMEDY, WITH RESPECT TO ANY ALLEGED PATENT OR COPYRIGHT INFRINGEMENT OR TRADE SECRET MISAPPROPRIATION BY ANY PRODUCT PROVIDED UNDER THIS AGREEMENT.

13. **TERMINATION AND EFFECT OF TERMINATION.** If a Software license was provided for limited term use, such license will automatically terminate at the end of the authorized term.

13.1. Mentor Graphics may terminate this Agreement and/or any license granted under this Agreement immediately upon written notice if Customer: (a) exceeds the scope of the license or otherwise fails to comply with the licensing or confidentiality provisions of this Agreement, or (b) becomes insolvent, files a bankruptcy petition, institutes proceedings for liquidation or winding up or enters into an agreement to assign its assets for the benefit of creditors. For any other material breach of any provision of this Agreement, Mentor Graphics may terminate this Agreement and/or any license granted under this Agreement upon 30 days written notice if Customer fails to cure the breach within the 30 day notice period. Termination of this Agreement or any license granted hereunder will not affect Customer's obligation to pay for Products shipped or licenses granted prior to the termination, which amounts shall be payable immediately upon the date of termination.

13.2. Upon termination of this Agreement, the rights and obligations of the parties shall cease except as expressly set forth in this Agreement. Upon termination, Customer shall ensure that all use of the affected Products ceases, and shall return hardware and either return to Mentor Graphics or destroy Software in Customer's possession, including all copies and documentation, and certify in writing to Mentor Graphics within ten business days of the termination date that Customer no longer possesses any of the affected Products or copies of Software in any form.

14. **EXPORT.** The Products provided hereunder are subject to regulation by local laws and United States government agencies, which prohibit export or diversion of certain products and information about the products to certain countries and certain persons. Customer agrees that it will not export Products in any manner without first obtaining all necessary approval from appropriate local and United States government agencies.

15. **U.S. GOVERNMENT LICENSE RIGHTS.** Software was developed entirely at private expense. All Software is commercial computer software within the meaning of the applicable acquisition regulations. Accordingly, pursuant to US FAR 48 CFR 12.212 and DFAR 48 CFR 227.7202, use, duplication and disclosure of the Software by or for the U.S. Government or a U.S. Government subcontractor is subject solely to the terms and conditions set forth in this Agreement, except for provisions which are contrary to applicable mandatory federal laws.

16. **THIRD PARTY BENEFICIARY.** Mentor Graphics Corporation, Mentor Graphics (Ireland) Limited, Microsoft Corporation and other licensors may be third party beneficiaries of this Agreement with the right to enforce the obligations set forth herein.

17. **REVIEW OF LICENSE USAGE.** Customer will monitor the access to and use of Software. With prior written notice and during Customer's normal business hours, Mentor Graphics may engage an internationally recognized accounting firm to review Customer's software monitoring system and records deemed relevant by the internationally recognized accounting firm to confirm Customer's compliance with the terms of this Agreement or U.S. or other local export laws. Such review may include FLEXlm or FLEXnet (or successor product) report log files that Customer shall capture and provide at Mentor Graphics' request. Customer shall make records available in electronic format and shall fully cooperate with data gathering to support the license review. Mentor Graphics shall bear the expense of any such review unless a material non-compliance is revealed. Mentor Graphics shall treat as confidential information all information gained as a result of any request or review and shall only use or disclose such information as required by law or to enforce its rights under this Agreement. The provisions of this Section 17 shall survive the termination of this Agreement.

18. **CONTROLLING LAW, JURISDICTION AND DISPUTE RESOLUTION.** The owners of certain Mentor Graphics intellectual property licensed under this Agreement are located in Ireland and the United States. To promote consistency around the world, disputes shall be resolved as follows: excluding conflict of laws rules, this Agreement shall be governed by and construed under the laws of the State of Oregon, USA, if Customer is located in North or South America, and the laws of Ireland if Customer is located outside of North or South America. All disputes arising out of or in relation to this Agreement shall be submitted to the exclusive jurisdiction of the courts of Portland, Oregon when the laws of Oregon apply, or Dublin, Ireland when the laws of Ireland apply. Notwithstanding the foregoing, all disputes in Asia arising out of or in relation to this Agreement shall be resolved by arbitration in Singapore before a single arbitrator to be appointed by the chairman of the Singapore International

Arbitration Centre ("SIAC") to be conducted in the English language, in accordance with the Arbitration Rules of the SIAC in effect at the time of the dispute, which rules are deemed to be incorporated by reference in this section. This section shall not restrict Mentor Graphics' right to bring an action against Customer in the jurisdiction where Customer's place of business is located. The United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement.

19. **SEVERABILITY.** If any provision of this Agreement is held by a court of competent jurisdiction to be void, invalid, unenforceable or illegal, such provision shall be severed from this Agreement and the remaining provisions will remain in full force and effect.

20. **MISCELLANEOUS.** This Agreement contains the parties' entire understanding relating to its subject matter and supersedes all prior or contemporaneous agreements, including but not limited to any purchase order terms and conditions. Some Software may contain code distributed under a third party license agreement that may provide additional rights to Customer. Please see the applicable Software documentation for details. This Agreement may only be modified in writing by authorized representatives of the parties. Waiver of terms or excuse of breach must be in writing and shall not constitute subsequent consent, waiver or excuse.

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