SPINFIRE CONVERT

*Powered by Theorem Technology*

# User Guide

## CADDS <> NX

| **Product Category** | **CADPublish** |
|---|---|
| Product Group | CADDS <> NX |
| Product Release Version | 28.4 |

| **Document Type** | User Guide |
|---|---|
| Document Status | Released |
| Document Revision | 1.0 |
| Document Author | John Welton |
| Document Issued | 22/01/2026 |


THEOREM HOUSE
MARSTON PARK
BONEHILL RD
TAMWORTH
B78 3HU
UNITED KINGDOM

+44(0)1827 305 350

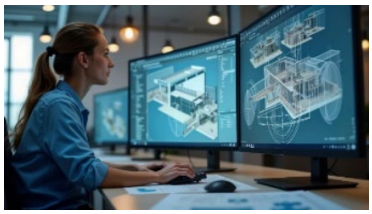
THEOREM SOLUTIONS INC.
100 WEST BIG BEAVER
TROY
MICHIGAN
48084
USA

+(513) 576 1100

## Contents

# Overview of SpinFire Convert

## About **SpinFire Convert**


SpinFire Convert is a world leader in the field of Engineering Data Services and Solutions. This leadership position stems from the quality of our technology and the people in the company. Quality comes not only from the skills and commitment of our staff, but also from the vigorous industrial use of our technology & services by world leading customers.

We are proud that the vast majority of the world's leading Automotive, Aerospace, Defense, Power Generation and Transportation companies and their Supply chains use our products and services daily. Working closely with our customers, to both fully understand their requirements and feed their input into our development processes has significantly contributed to our technology and industry knowledge.

SpinFire Convert has strong relationships with the major CAD and PLM vendors, including Autodesk, Dassault Systemes, ICEM Technologies (a Dassault company), PTC, SolidWorks, Spatial Technology and Siemens PLM Software. These relationships enable us to deliver best-in-class services and solutions to engineering companies worldwide.

## CAD PROCESSING PRODUCTS

SPINFIRE PUBLISH

*Automatically Process and Publish Inbound CAD files (Formerly CAD Publisher)*

- Documentation
- Knowledge Base
- Archived Documentation

SPINFIRE CONVERT

*Seamless data exchange between CAD and Visualization (Formerly Theorem CADTranslate & CADPublish)*

- Documentation
- Knowledge Base
- Archived Documentation

## CAD VIEWING PRODUCTS

SPINFIRE INSIGHT

*Comprehensive interrogation of 2D and 3D CAD Files (Formerly Spinfire Ultimate)*

- Documentation
- Knowledge Base
- Archived Documentation

SPINFIRE EXTENDED REALITY - XR

- Documentation
- Knowledge Base
- Archived Documentation

# The CADDS <> NX Translator

The CADDS - NX translator may be installed on a number of machines each accessing a central network-floating license.

The CADDS - NX Translator is a bi-directional converter between the PTC's CADDS 5 CAD Application and Siemens Designcenter NX 2512 CAD Application.

It enables the user to convert all forms of 3D Mechanical Design Geometry and Assembly data, together with system defined attribute information, colour information, between these two systems.

The translator can be invoked in either an interactive or batch mode with the command line interface allowing the conversion process to be integrated into any process-oriented operation. Alternatively, from SpinFire Convert version 18.0 the conversion process may be operated by using the new Unified Interface.

## Primary Product Features

- Converts all types of geometry, wire frame, surfaces, trimmed surfaces (faces) and solid models.
- Converts assembly structure between both systems.
- Converts attribute data including colour and layer information.
- Integrated with the NX installation.
- The conversion process can be run Interactively, Batch Mode or using the Unified Interface
- Command line interface allows process integration.
- Data can be filtered by layer and entity type during processing. Geometry can be filtered and selectively processed.

## Primary Product Benefits

- Being a direct database converter all pre and post processing is eliminated, saving time.
- Reduce costs due to processing time and increase overall conversion success levels by filtering input data and focusing the conversion to only those elements required.
- Reduce costs and risks associated to accessing the wrong version of data by integrating the conversion process into a related business process.
- With over 30 years of industrial use SpinFire Convert (formally Theorem) translation products robustness and quality is well proven, reducing your business risk.

This document will focus specifically on guidance for the use of the Spinfire Convert for CADDS – NX product. For information regarding any SpinFire Convert product ranges please contact: sales-spinfire.applications@techsoft3d.com

# Getting Started

## Documentation & Installation Media

The latest copy of the User Guide documentation can be found on our web site at: https://docs.techsoft3d.com/spinfire/convert/index.html

Each product has a specific link that provides user documentation in the form of PDF and Tutorials.

The latest copy of SpinFire Convert software can be found via the link above and by searching for the specific product. Each product has a specific link to the Product Release Document, which contains a link to the download location of the installation CD.

Alternatively, you can request a copy of the software to be shipped on a physical CD.

## Installation

The installation is run from the .msi file download provided. For full details of the installation process, visit https://docs.techsoft3d.com/spinfire/convert/index.html and select UI from the product selection list.

## License Configuration

To run any product a valid license file is required. The Flex License Manager is run from the .msi file download provided. For full details of the installation process, visit https://docs.techsoft3d.com/spinfire/convert/index.html

## Using the Product

To use the product, follow the documented steps found in this document or follow the online video tutorials which can be found from https://docs.techsoft3d.com/spinfire/convert/index.html

# Using the Product

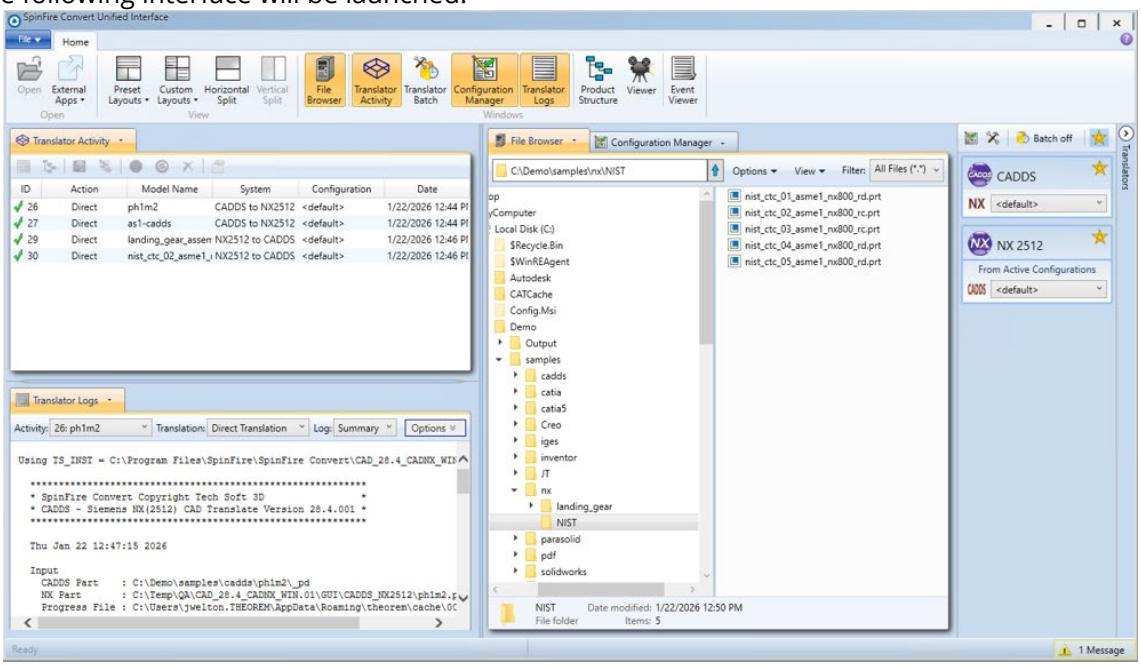
## Default Translations

*Default Translation – via the Unified Interface*

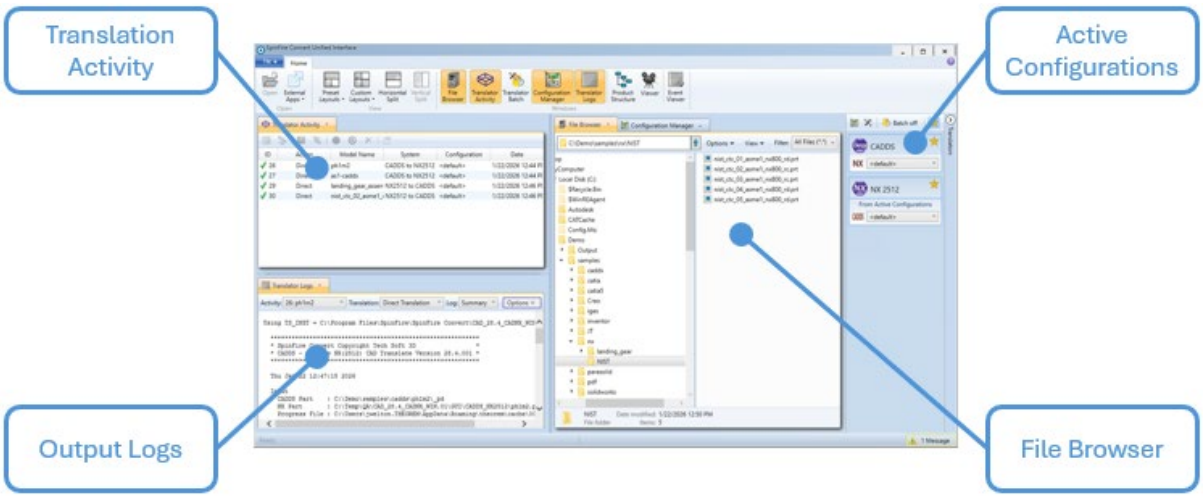
The Unified Interface can be started via the Start Menu – if a shortcut was added during installation.

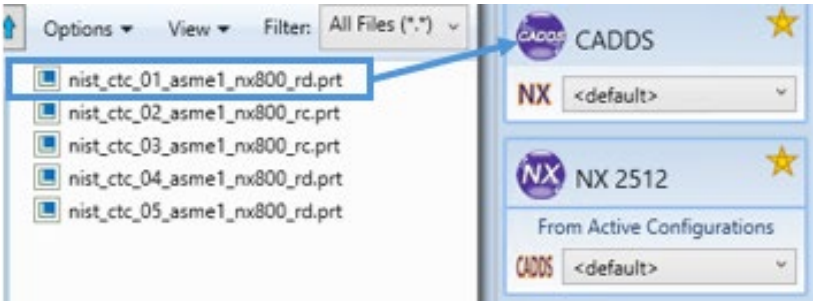
Alternatively, the Unified Interface can be run via a Windows Explorer selection in:
***<UI_installation_directory>\bin\Unified_Interface.cmd***

The following interface will be launched:



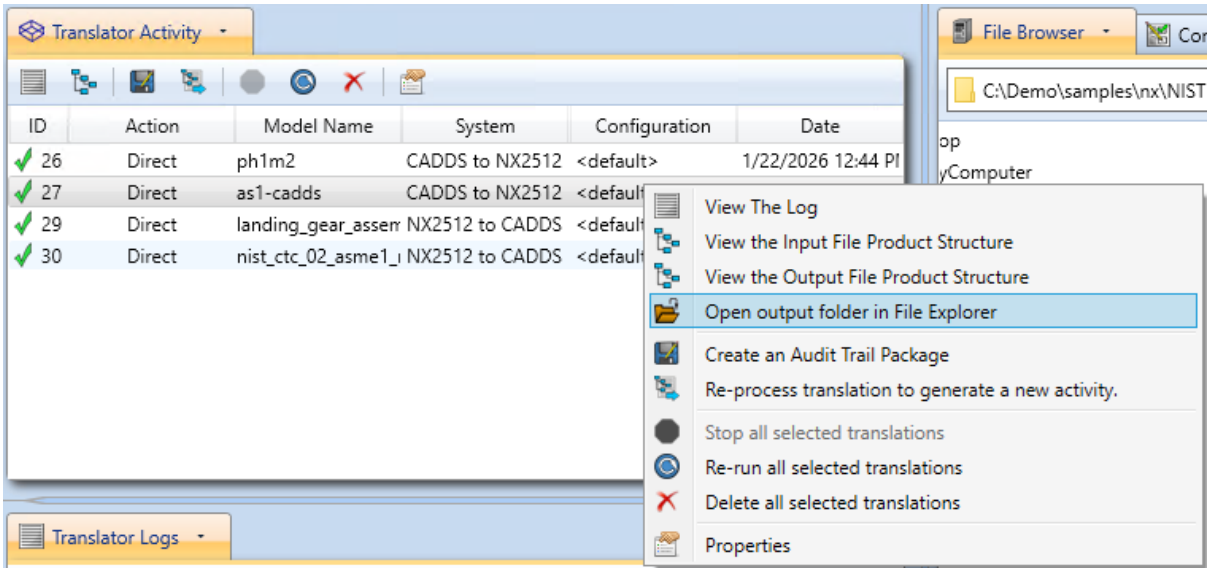

The default layout is split into 4 primary areas, which can be altered to the users prefer:
The simplest way to translate from CADDS or NX is to drag a file from the file Browser Pane on to the Active Configurations for the translation you require.






On completion, the Unified Interface will display the activity information and details from the log file created during the translation, if requested, in the Translation Activity and Output Log panes, respectively.

The generated output data can be located by selecting the translation from the Activity pane and opening the output folder:




*Default Translation – via the Command Line*

Running a translation via the command line can be carried out via the ***cad_run.cmd*** file located in the ***<installation_directory>\bin*** directory. The format of the command is as follows when translating from CADDS to NX:

***<Translator_installation_directory>\bin\cad_run.cmd CADDS_NX2512 –i <input_file> -o <output_file> progress_file "<Path_to_progress_log\.txt>"***

The format of the command is as follows when translating from NX to CADDS:

***<Translator_installation_directory>\bin\cad_run.cmd NX2512_ CADDS –i <input_file> -o <output_file> search_path "<parts_dir1>";"<Parts_dir2>" progress_file "<Path_to_progress_log\.txt>"***

# Translator Customization

SpinFire Convert allows the information that is read from the source system and written to the target system to be tailored via a set of user specified arguments. Commonly used arguments are supported via the Unified Interface, with Advanced Arguments being described within this document for use in the Unified Interface or via the Command Line invocation.

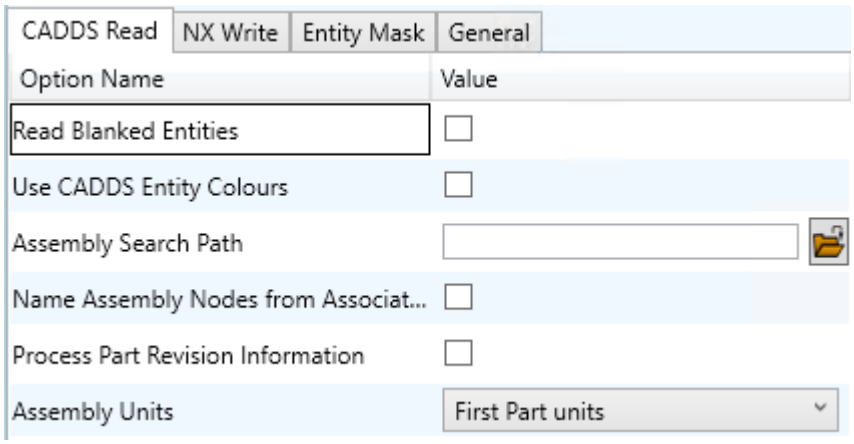
## Common Options for CADDS to NX

Within the Configuration Manager pane of the Unified Interface, arguments that can be specified when publishing CADDS data into NX are grouped into 4 areas:

- CADDS Read – Those arguments that affect how data is read from CADDS
- NX Write – Those arguments that affect how the data is written to NX
- Entity Mask – Those arguments that allow specific read entities to be masked
- General – Those arguments that are common to ALL Publishing activities regardless of source data.

### *CADDS Read Arguments*

The image below shows the CADDS Read arguments that are available, with their default settings:



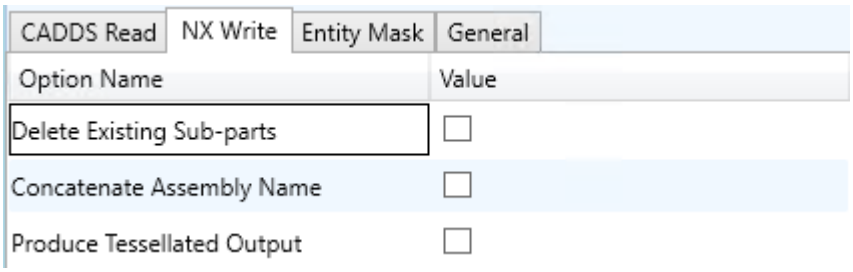

Each of these options is described below:

| Option | Description |
|---|---|
| **Read Blanked Entities** | Read Blanked Entities/Files (Default is off).<br>• Command Line Syntax:<br>o on_blank |
| **Use CADDS Entity Colours** | Use CADDS Entity Colours instead of Part colours (Default is off).<br>• Command Line Syntax: |

| | |
|---|---|
| | ○ ecol |
| **Assembly Search Path** | Defines the locations of assembly components.<br>• Command Line Syntax:<br>○ search_path <path1>;<path2> |
| **Name Assembly Nodes from Associated Geometry File** | Name Assembly Nodes from Associated Geometry File.<br>• Command Line Syntax:<br>○ mapitem |
| **Process Part Revision Information** | For assemblies only (Default is off).<br>• Command Line Syntax:<br>○ read_rev |
| **Assembly Units** | Specify the Units when reading an assembly (Default setting will use first part units).<br>• Command Line Syntax:<br>○ assy_units mm<br>○ assy_units inch |

*NX Write Arguments*

The image below shows the Write NX arguments that are available, with their default settings:

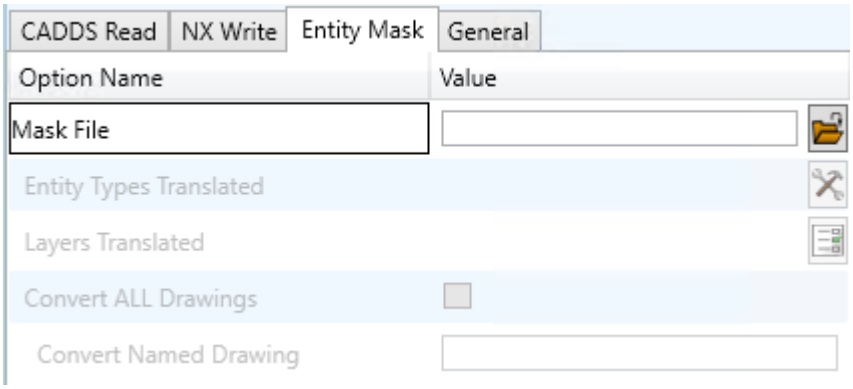



Each of these options is described below:

| Option | Description |
|---|---|
| **Delete Existing Sub-parts** | Delete existing sub-parts.<br>• Command Line Syntax<br>○ delete_parts (to enable, default is off) |
| **Concatenate Assembly Name** | Concatenate Assembly Name TO Output Filename.<br>• Command Line Syntax<br>○ concat_assy (to enable, default is off) |
| **Produce Tessellated Output** | Produce Tessellated NX file<br>• Command Line Syntax<br>○ tess_output (to enable, default is off) |

*CADDS - NX Entity Masking Arguments*

The image below shows the Masking arguments that are available, with their default settings:



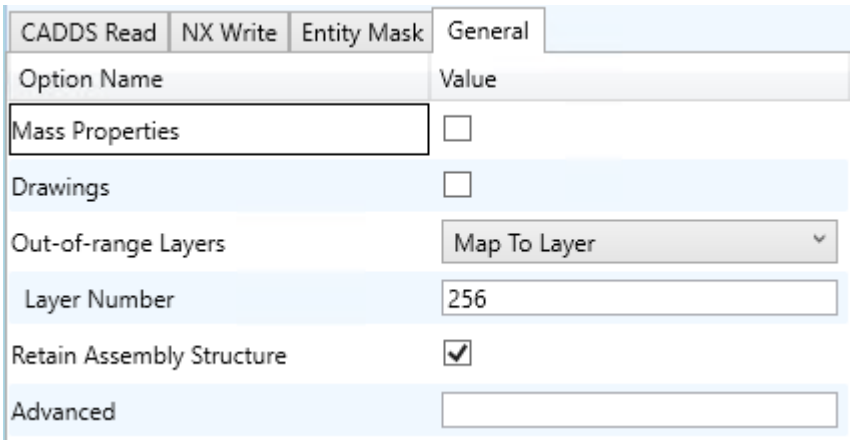

Each of these options is described below:

| Option | Description |
|---|---|
| **Mask File** | Specifies the Mask File to be written to, that can be referenced by future translations. A Mask file MUST be specified if masking is required. The first line in this file is OFF ALL ENT:<br>• Command Line Syntax:<br>  ○ Mask <path\filename> |
| **Entity Types Translated** | Specifies a selection list from which to select which entity types are to be processed. The following types are available: POI, LIN, ARC, CON, CUR, SUR, FAC, SOL<br>• Mask File Syntax:<br>  ○ Add any of the above to the specified mask file, one entry per line prefixed by the word ON, e.g. ON POI to ensure they are considered in the translation |
| **Layers Translated** | Select layers to translate.<br>• Mask File Syntax:<br>  ○ A single entry of ON ALL LAY must precede any Layer Mask command.<br>  ○ Add a list or range of numbers representing layer to be processed to the specified mask file to ensure they are NOT considered in the translation e.g. OFF LAY 114,149,166,167,168 |
| **Convert ALL Drawings** | Convert All Drawings.<br>• Command Line Syntax:<br>  ○ draft |
| **Convert Named Drawing** | Convert Drawing by Name. |

| | |
|---|---|
| | • Mask File Syntax:<br>  ○ ON DRA <name> |

*CADDS - NX General Arguments*

The image below shows the General arguments that are available, with their default settings.




Each of these options is described below:

| Option | Description |
|---|---|
| **Mass Properties** | Allows Mass Property information to be read from the source data and written as attributes *(Default is OFF)*<br>• Command Line Syntax:<br>  ○ mprops |
| **Drawings** | Translate All Drawings *(Default is off)*<br>• Command Line Syntax:<br>  ○ draft |
| **Out-of-range Layers** | Maintain the assembly structure during translation. *(Default is ON)*<br>• Command Line Syntax:<br>  ○ base_layer <int><br>  ○ cycle_layer |
| **Retain Assembly Structure** | Maintain the assembly structure during translation. *(Default is ON)*<br>• Command Line Syntax:<br>  ○ offditto – to turn off |
| **Advanced** | Allows any of the Command Line Advanced arguments documented to be passed to the Unified Interface invocation. |

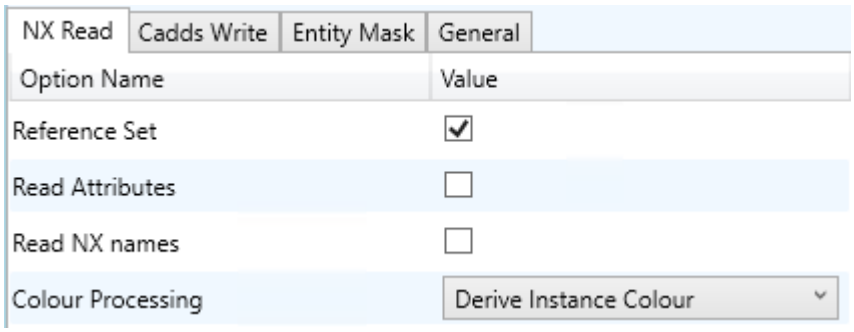
# Common Options for NX to CADDS

Within the Configuration Manager pane of the Unified Interface, arguments that can be specified when publishing NX data into CADDS are grouped into 4 areas:

- NX Read – Those arguments that affect how the data is written to NX
- CADDS Write – Those arguments that affect how data is read from CADDS
- Entity Mask – Those arguments that allow specific read entities to be masked
- General – Those arguments that are common to ALL Publishing activities regardless of source data.

*NX Read Arguments*

The image below shows the CADDS Read arguments that are available, with their default settings:



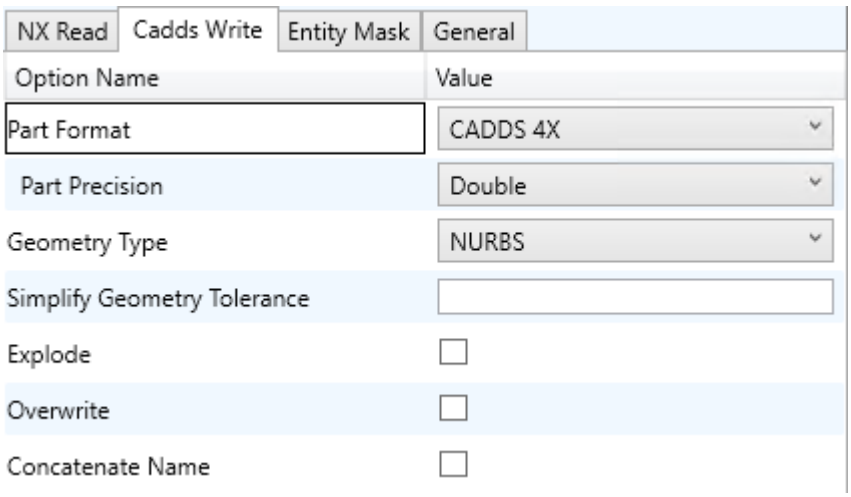

Each of these options is described below:

| Option | Description |
|---|---|
| **Reference Set** | Enabled reference set processing.<br>• Command Line Syntax:<br>o ref_set (enabled – Default)<br>o no_ref_set |
| **Read Attributes** | Read NX detail user attributes.<br>• Command Line Syntax:<br>o read_attrs |
| **Read NX names** | Read NX entity names, if they exist.<br>• Command Line Syntax:<br>o read_name<br>o no_read_name (disabled – Default) |

| | |
|---|---|
| **Colour Processing** | How to process colour.<br>• Command Line Syntax:<br>  ○ derive_instance_colour<br>  ○ use_body_colour<br>  ○ use_instance_colour |

*CADDS Write Arguments*

The image below shows the Write NX arguments that are available, with their default settings:



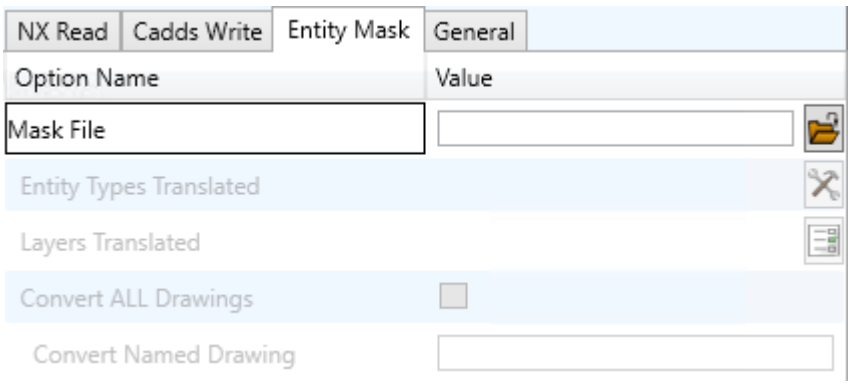

Each of these options is described below:

| Option | Description |
|---|---|
| **Part Format** | Specifies the format of the output (Default is CADDS 4X).<br>• Command Line Syntax<br>  ○ CADDS5 |
| **Part Precision** | Specifies the precision when writing CADDS 4 format (Default is Double).<br>• Command Line Syntax<br>  ○ single |
| **Geometry Type** | Defines the geometry type *(Default is NURBS)*.<br>• Command Line Syntax<br>  ○ asd |
| **Simplify Geometry Tolerance** | Simplify the geometry (e.g. 0.001 in input part units).<br>• Command Line Syntax<br>  ○ c4simplify |
| **Explode** | Explode Solids to Faces (Default is off).<br>• Command Line Syntax |

| | |
|---|---|
| | ○ split_brep_faces |
| **Overwrite** | Overwrite Existing Parts.<br>• Command Line Syntax<br>○ overwrite<br>○ no_overwrite (Default) |
| **Concatenate Name** | Concatenate Assembly Name.<br>• Command Line Syntax<br>○ concat_assy<br>○ no_concat_assy (Default) |

*NX - CADDS Entity Masking Arguments*

The image below shows the Masking arguments that are available, with their default settings:



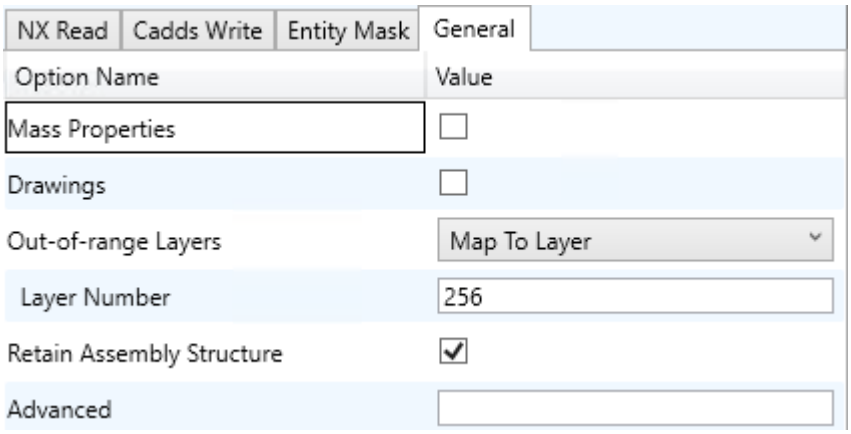

Each of these options is described below:

| Option | Description |
|---|---|
| **Mask File** | Specifies the Mask File to be written to, that can be referenced by future translations. A Mask file MUST be specified if masking is required. The first line in this file is OFF ALL ENT:<br>• Command Line Syntax:<br>○ Mask <path\filename> |
| **Entity Types Translated** | Specifies a selection list from which to select which entity types are to be processed. The following types are available: POI, LIN, ARC, CON, CUR, SUR, FAC, SOL<br>• Mask File Syntax:<br>○ Add any of the above to the specified mask file, one entry per line prefixed by the word ON, e.g. ON POI to ensure they are considered in the translation |

| | |
|---|---|
| **Layers Translated** | Select layers to translate.<br>• Mask File Syntax:<br>  ○ A single entry of ON ALL LAY must precede any Layer Mask command.<br>  ○ Add a list or range of numbers representing layer to be processed to the specified mask file to ensure they are NOT considered in the translation e.g. OFF LAY 114,149,166,167,168 |
| **Convert ALL Drawings** | Convert All Drawings.<br>• Command Line Syntax:<br>  ○ draft |
| **Convert Named Drawing** | Convert Drawing by Name.<br>• Mask File Syntax:<br>  ○ ON DRA <name> |

*NX - CADDS General Arguments*

The image below shows the General arguments that are available, with their default settings.




Each of these options is described below:

| Option | Description |
|---|---|
| **Mass Properties** | Allows Mass Property information to be read from the source data and written as attributes *(Default is OFF)*<br>• Command Line Syntax:<br>  ○ mprops |
| **Drawings** | Translate All Drawings *(Default is off)*<br>• Command Line Syntax:<br>  ○ draft |
| **Out-of-range Layers** | Maintain the assembly structure during translation. *(Default is ON)* |

| | |
|---|---|
| | • Command Line Syntax:<br>  ○ base_layer <int><br>  ○ cycle_layer |
| **Retain Assembly Structure** | Maintain the assembly structure during translation. *(Default is ON)*<br>• Command Line Syntax:<br>  ○ offditto – to turn off |
| **Advanced** | Allows any of the Command Line Advanced arguments documented to be passed to the Unified Interface invocation. |

## CADDS to NX Arguments List

### *CADDS Read Arguments*

Each of these options is described below.

| Option | Description |
|---|---|
| Maintain Blanked Entities | Read blanked entities and maintain their show/hid state Default is OFF<br>• Command Line Syntax<br>• maintain_blanked |
| Use CADDS Entity Colours | Use CADDS entity colours rather than part colours<br>• Command Line Syntax:<br>• ecol |
| Assembly Search Path | Specify the search paths that contain assembly parts<br>• Command Line Syntax:<br>• SEARCH_PATH "PATH1;PATH 2;PATH3"<br>OR<br>SEARCH_PATH <Filename><br>Where the file contains per line the paths to search i.e.<br>PATH1<br>PATH2<br>PATH3 |
| Name Assembly Nodes from Associated Geometry File | • Command Line Syntax: Default is OFF<br>• mapitem |
| Process Part Revision Information | Read assembly revision info from _ps file<br>• Command Line Syntax:<br>• read_rev |
| Assembly Units | Specify the units when reading an assembly<br>• Command Line Syntax:<br>• assy_units <mm/inch> |

*NX Write Arguments*

| CMD LINE Option | Purpose | Data Type | Default |
|---|---|---|---|
| **poly_sol/no_poly_sol** | For gco Fsolids produce Facetted bodies (else attempt brep) | Flag | off |
| **heal_ug <tol> [def tol = 0.0095/units]** | attempt a UG heal on the created body (if nocheck on) | Flag | off |
| **keep_all_bodies/no_keep_all_bodies** | If input solid gets created as a solid after sewing, plus one or more tiny sheet bodies, keep or delete these | Flag | on (keep all) |
| **nocheck** | Don't check created Parasolid geometric entities | Flag | off |
| **no_brep_prep** | Prepare solids switched off | Flag | on (surfs read as nurbs+prep) |
| **pstolmodel <num>/nopstolmodel [def num = 3]** | Enable Parasolid tolerant modeling | Flag | on |
| **pssew <tol>/nosew** | Sew failed breps and opensols | Flag | on |
| **csg_prep <tol> [def tol = 0.000001*scale]** | Prepare CSG Prinitives | Flag | off |
| **csg_shift <tol> [def tol = 0.000001*scale]** | Change CSG Shift Distance | Flag | off |
| **csgfix** | Fix CSG Primitives | Flag | off |
| **ps_fix_small/no_fix_ps_small** | Remove small edges, sliver and spike faces in breps | Flag | off |
| **ps_fix_osol/no_ps_fix_osol** | Remove small edges, sliver and spike faces in opensolids | Flag | off |

## NX to CADDS Advanced Arguments

### NX Read Arguments

| CMD LINE Option | Purpose | Data Type | Default |
|---|---|---|---|
| **read_name no_read_name** | Read UG entity names (if they exist) | Flag | off |
| **part_layer** | Process As Saved part layers, else All | Flag | ALL |
| **read_pmi** | Read PMI as stroked data | Flag | off |

| | | | |
|---|---|---|---|
| **noprep/prepsol** | Prepare solids switched off / on | Flag | on (surfs read as nurbs+prep) |
| **rd_native_edge/no_read_native_edge** | Read native edge curves | Flag | off (read as nurbs curves) |
| **trim_face_surfs/no_trim_face_surfs** | Trim surface to face | Flag | off (don't trim) |
| **ugdiags** | Switch on validate read to progress file | Flag | off |
| **read_diags** | Switch on read diagnostics to progress file | Flag | off |
| **no_mergen** | No Parasolid merging of entities | Flag | on (merge) |
| **checksol/nochecksol** | Check Parasolid entities before read | Flag | off (don't check) |
| **noprep/prepsol** | Prepare solids switched off / on | Flag | on (surfs read as nurbs+prep) |
| **mprops** | Read Mass Props | Flag | off |
| **draft** | Process 2D drawings | Flag | off |