# Simulink export

On this page

- Basic guidelines
- Invoking export function
- Export Options

## **Basic guidelines**

The main (selected root owning Block) is exported into a separate \*.slx file with a Block name.

All other used or referenced Blocks are exported as one library \*.slx file.

- Blocks which have classifier behavior as statemachine are exported as Stateflow blocks.
- · Blocks which behavior is described by Parametric equations are exported as SFunctions or Simscape models
- If blocks have bidirectional (inout) ports, Simscape should be selected as export option, as Simulink only supports unidirectional inports and outports.
- Use ssc\_build in Matlab to generate library and blocks from generated Simscape files
- Both flow ports and proxy ports are supported if they represent one primitive flow type (typed by Real, Integer, Boolean, or one of their specializations)
- Connector must link ports, can't be attached directly to the part
- · Ports must be typed
- InstanceSpecifications can be used to define or overwrite initial parameter values

#### Data types mapping

SysML	Simulink	Simscape
Value type specializing Real, Integer, or Boolean with unit	N/A	N/A
Property typed by Real, Integer, Boolean or one of their specializations	N/A	Variable with associated unit
Real	double	double
String	N/A	N/A
Boolean	boolean	N/A
Integer	int32	N/A

## Currently not supported

- Proxy port/Interface block with more than 1 flow property (composite signals or buses)
- Behaviors defined as Activity diagrams or Interactions (Sequence diagrams)
- Mixing of Parametrics and StateMachine in one Block
- Enumerations
- Multiplicities

More constraints and examples can be found in SysPhS specification document. Click here to access it.

### **Diagram layout**

Shape and path positions in IBD and Statemachine diagrams are exported, however result is not exactly the same sometimes and can be changed or distorted on the Simulink side.

Note that Simulink only allows input ports on the left, outputs on the right, so adjust your SysML IBD diagrams accordingly to get best visual result and avoid automatic ports and connectors replacements.

- First owned IBD is exported as Simulink block diagram in case of multiple owned IBDs in a Block.
- Nested symbols such as nested parts or ports are not supported
- If there is more than one connector going in or out of same port, Simulink will merge them into one and adds the branching point

## Invoking export function

To export to the Simulink model

Project       Ctrl+O         Save Project       Ctrl+S         Save Project As       Close Project As         Close Project       Close All Projects         Open Element from URL       Model Execution & Integration         Use Project       >         Import From       >         Share Packages       Project Usage         Save as Image       UML 2.5 XMI File         Print       Ctrl+P         Print Preview       Requirements Interchange Format (Reprint Change Format (Reprin	File New Project		Ctrl+Shift+N	1
Save Project       Ctrl+S         Save Project As       Close Project As         Close Project       Close All Projects         Open Element from URL       Model Execution & Integration         Use Project       >         Import From       >         Share Packages       >         Save as Image       Project Usage         Print       Ctrl+P         Print Preview       Print Preview         Print Options       Project Properties         Switch Projects       >				
Save Project As         Close Project         Close All Projects         Open Element from URL         Model Execution & Integration         Use Project         Import From         Share Packages         Save as Image         Print         Ctrl+ P         Print Preview         Print Options         Project Properties         Switch Projects         Switch Projects         Switch Projects				
Close Project Close All Projects Open Element from URL Model Execution & Integration Use Project Import From Share Packages Save as Image Print Print Preview Print Options Project Properties Switch Projects Switch Projects Switch Projects System Architect DoDAF 1.5 Rhapsody SysML		i	curro -	
Close All Projects         Open Element from URL         Model Execution & Integration         Use Project         Import From         Share Packages         Save as Image         Print         Print Preview         Print Options         Project Properties         Switch Projects         Switch Projects         Switch Projects				
Model Execution & Integration         Use Project         Import From         Export To         Share Packages         Save as Image         Print         Ctrl+P         Print Preview         Print Options         Project Properties         Switch Projects         Switch Projects		cts		
Use Project Import From > Export To > Share Packages Save as Image Print Print Preview Print Options Project Properties Switch Projects Switch Projects Switch Projects System Architect DoDAF 1.5 Rhapsody SysML	Open Element	from URL		
Import From       >         Export To       >         Share Packages       Save as Image         Save as Image       UML 2.5 XMI File         Print       Ctrl+P         Print Preview       Requirements Interchange Format (Reguirements Interchange Format (Reguirements Interchange Format (Reguirements Interchange Format (Reguirements Switch Projects         Switch Projects       >         Switch Projects       >         System Architect DoDAF 1.5       Rhapsody SysML	Model Executi	on & Integration		-
Export To       Project Usage         Share Packages       Save as Image         Save as Image       UML 2.5 XMI File         Print       Ctrl+P         Print Preview       Requirements Interchange Format (Re         Project Properties       Switch Projects         Switch Projects       System Architect DoDAF 1.5         Rhapsody SysML       Project Usage	Use Project		>	-
Share Packages       Save as Image         Save as Image       UML 2.5 XMI File         Print       Ctrl+P         Print Options       Requirements Interchange Format (Re         Project Properties       Switch Projects         Switch Projects       System Architect DoDAF 1.5         Rhapsody SysML       System Architect DoDAF 1.5	Import From		>	
Save as Image Print Ctrl+P Print Preview Print Options Project Properties Switch Projects Switch Projects Project Save as Image Project Properties Switch Projects Simulink System Architect DoDAF 1.5 Rhapsody SysML	Export To		>	Project Usage
<ul> <li>Print Ctrl+P</li> <li>Print Preview</li> <li>Print Options</li> <li>Project Properties</li> <li>Switch Projects</li> <li>Switch Projects</li> <li>System Architect DoDAF 1.5</li> <li>Rhapsody SysML</li> </ul>	Share Package	5		Template
Print Preview     Print Options     Project Properties     Switch Projects     Switch Projects     Switch Projects     System Architect DoDAF 1.5     Rhapsody SysML	Save as Image			UML 2.5 XMI File
Print Options Project Properties Switch Projects Switch Projects Switch Projects Switch Projects Simulink System Architect DoDAF 1.5 Rhapsody SysML	🕒 Print		Ctrl+P	MOF XMI File
Project Properties  Switch Projects  Switch Projects  Simulink  System Architect DoDAF 1.5  Rhapsody SysML	🕒 Print Preview			Requirements Interchange Format (Re
Switch Projects Switch Projects System Architect DoDAF 1.5 Rhapsody SysML	Print Options.			EMF Ecore File
Switch Projects Simulink System Architect DoDAF 1.5 Rhapsody SysML	Project Proper	ies		
System Architect DoDAF 1.5 Rhapsody SysML	Switch Project		· · · · · · · · · · · · · · · · · · ·	
Rhapsody SysML				
				Rhapsody SysML

• Right-click the selected Block and then click Tools > Export to Simulink.

Specification	Enter	
Symbol Properties	Alt+Enter	
Element Group	>	
Create Diagram		
Create Relation	>	
Belect in Containment Tr	ree Alt+B	
Belect in Structure Tree		
Go To	>	
Display	>	
Related Elements	>	
Refactor	>	
Tools	<b>&gt;</b>	Hierarchy Diagram Wizard
Edit Compartments		Create Setters/Getters
Stereotype		Implement/Override Operations
AutoStyler	>	Create Instance
Concept Modeling	>	Extract Legends
Concept Modeling	>	Extract Legends Generic Table Wizard
Concept Modeling	>	-
Concept Modeling	>	Generic Table Wizard
Concept Modeling	>	Generic Table Wizard Generate Code Framework
Concept Modeling	>	Generic Table Wizard Generate Code Framework Check Syntax
Concept Modeling	>	Generic Table Wizard Generate Code Framework Check Syntax Reverse from Classpath
Concept Modeling	>	Generic Table Wizard Generate Code Framework Check Syntax Reverse from Classpath Export to Modelica

# **Export Options**

🔀 Simulink Export Opti	×			
Options Format: S-Function or Simscape: Simscape port libraries:	<ul> <li>Text (.mdl)</li> <li>Simscape</li> <li>Create new port types</li> </ul>	<ul> <li>XML (.sdl)</li> <li>S-Function version 1</li> <li>Reuse existing port types</li> </ul>	• S-Function version 2	
Output C:\Users\User\Desktop\C	limate Control Hardware.slx	OK	Cancel	Reset Options

Parametric Equation Wizard

- Format: choose between the legacy textual .mdl or newer compressed XML-based file format
  S-Function or Simscape: select how to export SysML parametrics as Simscape or S-Function
  Simscape port libraries: whether to create or reuse existing port types
  Output: the output location and the Simulink file name