

Decomposing Blocks

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Introduction

You can decompose [Blocks](#) by defining their specific features with properties. Block properties are used to capture the structural relationships and values of a Block. After the [Blocks are defined in the SysML Block Definition Diagram](#), you can decompose each Block into:

- Structural properties:
 - [Part Properties](#).
 - [Reference Properties](#).
 - [Value Properties](#).
 - [Constraint Properties](#).
 - Ports ([Flow Ports](#), [Full Ports](#), [Proxy Ports](#)).
 - [Flow Properties](#).
- Behavioral properties:
 - [Operations](#).
 - [Receptions](#).

In the figure below, you can see the *Computer* Block decomposed into four [Part Properties](#) and three [Proxy Ports](#). This decomposition can be shown directly in [Block compartments](#) (highlighted in blue), or can be represented in the [SysML Internal Block Diagram](#) (highlighted in orange).

Representing Block Properties in SysML Internal Block Diagram

You can represent Block properties in the [SysML Internal Block Diagram](#) in by using the **Display Parts/Ports** dialog, diagram toolbar, the shortcut menu, smart manipulator, drag-and-drop operation. All of those ways are described in the [Displaying parts and ports](#) page.

If you displayed nested properties, you can select their representation way. You can represent nested properties by displaying the property shape inside another property shape or by using dot notation. The detailed procedures how to work with property path notation, read in the [Property path notation](#) page.

If properties have their own [SysML Internal Block Diagrams](#), you can represent their internal structures inside shapes. [How to display internal structures on structured classifiers >>](#)

Selecting property types

The structural [Block](#) properties must have a type that may be another Block or another concept such as integer value. [How to select a property type >>](#)

Related pages

- [Creating and managing Block properties](#)
- [Creating SysML Internal Block diagram for a Block](#)
- [Selecting property type](#)
- [Displaying parts and ports](#)
- [Displaying internal structures on structured classifiers](#)
- [Property path notation](#)
- [SysML Internal Block Diagram context](#)
- [Creating nested parts by pasting items from the list](#)

Sample model

The model used in the figure of this page is the **InvertedPendulum** sample model. To open this sample do one of the following:

- Download [InvertedPendulum.mdzip](#).
- Find in modeling tool *<modeling tool installation directory>\samples\SysML\Inverted Pendulum\Inverted Pendulum.mdzip*.