
Simulink Report: HR_Rad_

Christian Müller

2008-03-06

Model - HR_Rad_

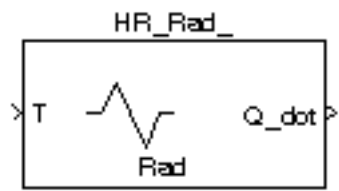


Tabelle 1.1. HR_Rad_ Simulation Parameters

<i>Solver</i> ode14x	<i>ZeroCross</i> on	<i>StartTime</i> 0.0 <i>StopTime</i> 10.0
<i>RelTol</i> 1e-3	<i>AbsTol</i> auto	<i>Refine</i> 1
<i>InitialStep</i> auto	<i>FixedStep</i> auto	<i>MaxStep</i> auto

Tabelle 1.2. HR_Rad_ Summary Information

<i>NumModelInputs</i>	N/A	<i>NumModelOutputs</i>	N/A
<i>NumVirtualSubsystems</i>	N/A	<i>NumNonvirtSubsystems</i>	N/A
<i>NumNonVirtBlocksInModel</i>	N/A	<i>NumBlockTypeCounts</i>	N/A
<i>NumBlockSignals</i>	N/A	<i>NumBlockParams</i>	N/A
<i>NumZCEvents</i>	N/A	<i>NumNonsampledZCs</i>	N/A

Systems

Name	Parent	Snapshot	Blocks	Signals
HR_Rad_	<root>		HR_Rad_	HR_Rad_<1>

Blocks

Tabelle 1.3. Block Type Count

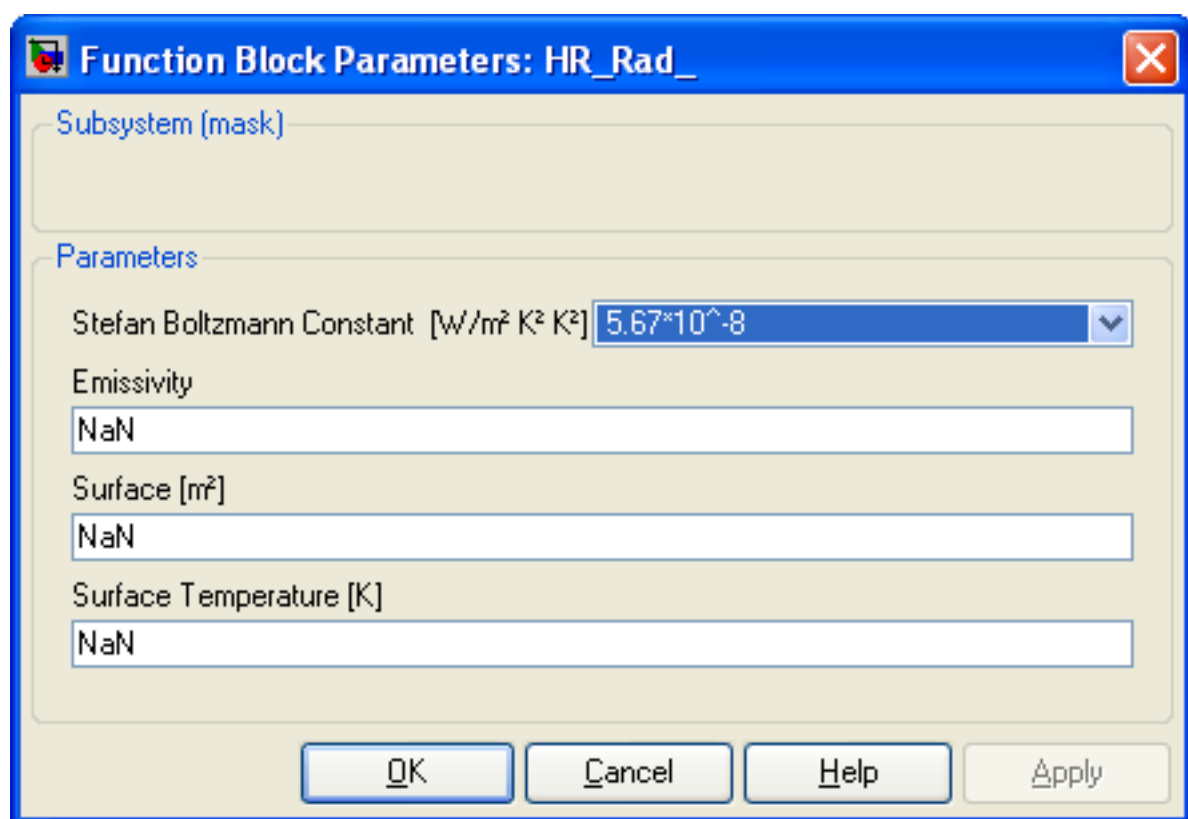
BlockType	Count	Block Names
Inport	6	T, sigma, epsilon, A, T_s, T
Constant	4	A, T_s, epsilon, sigma
Output	2	Q_dot, Q_dot
Terminator	1	Terminator
SubSystem	1	HR_Rad_
Stateflow (m)	1	Embedded MATLA Function
S-Function	1	SFunction


BlockType	Count	Block Names
Demux	1	Demux

Data and Functions

Tabelle 1.4. Model Functions

Function Name	Parent Blocks	Calling string
NaN	HR_Rad_ HR_Rad_ HR_Rad_	NaN NaN NaN

The image shows a software dialog box titled "Function Block Parameters: HR_Rad_". It has a blue title bar with a close button (X) in the top right corner. The dialog is divided into two main sections: "Subsystem (mask)" and "Parameters". The "Subsystem (mask)" section is currently empty. The "Parameters" section contains four input fields. The first field is a dropdown menu for the "Stefan Boltzmann Constant [W/m² K² K²]" with the value "5.67*10^-8" selected. The other three fields are text boxes for "Emissivity", "Surface [m²]", and "Surface Temperature [K]", all of which currently contain the text "NaN". At the bottom of the dialog, there are four buttons: "OK", "Cancel", "Help", and "Apply".

Function Block Parameters: HR_Rad_ 

Subsystem (mask)

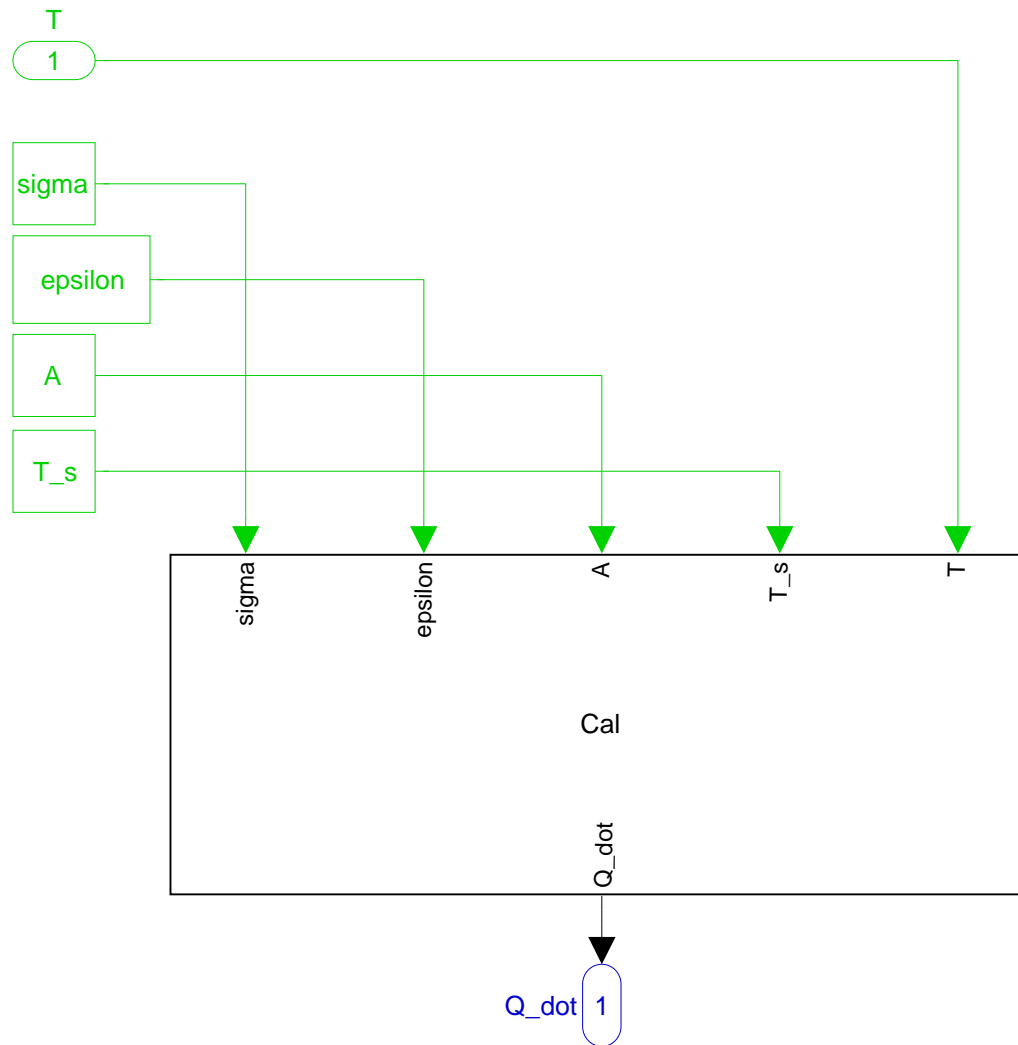
Parameters

Stefan Boltzmann Constant [W/m² K² K²]

Emissivity

Surface [m²]

Surface Temperature [K]



```
function Q_dot = Cal(sigma,epsilon,A,T_s,T)

% *****
% * Definition of a Heat Resistance
% *
% * Number of inputs:                1
% *
% * Parameter: Stefan Boltzmann Constant: sigma
% *           Emissivity:            epsilon
% *           Surface:                A
% *           Surface Temperature:    T_s
% *
% *
% * Relevant input variables of HR Rad
% *
% * Temperature:                    T_in
% *
% *
% * Relevant output variables of HR Rad
% *
% * Heat flow:                      Q_dot
% *
% *****
% * Embedded Matlab Function Cal:
% *
% * Calculations:
% * 1. Calculation heat flow.
% *
% *
% * Assumptions:
% * 1. Heat Transfer process = radiation
% *
% *
% * Last modification : 15.03.2008
% * Author : Christian Müller(HAW)
% *
% *****

% * 1. Calculation heat flow
Q_dot = epsilon*sigma*(T^4-T_s^4);
% *****
```