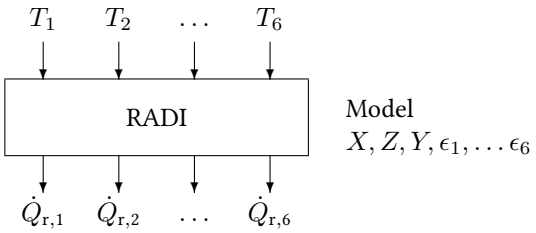
Block RADI

The RADI block calculates the long wave heat exchange between surface areas of different temperatures.





Name	RADI
Function	bs0003
Inputs	6
Outputs	6
Parameters	10
Strings	0
Group	S

Inputs

1 Surface temperature of south wall / °C
2 Surface temperature of west wall / °C
3 Surface temperature of north wall / °C
4 Surface temperature of east wall / °C
5 Surface temperature of ceiling / °C
6 Surface temperature of floor / °C

Outputs

1 Radiative heat flux to south wall / $\mathrm{W\,m^{-2}}$
2 Radiative heat flux to west wall / $\mathrm{W\,m^{-2}}$
3 Radiative heat flux to north wall / $\mathrm{W\,m^{-2}}$
4 Radiative heat flux to east wall / $\mathrm{W\,m^{-2}}$
5 Radiative heat flux to ceiling / $\mathrm{W\,m^{-2}}$
6 Radiative heat flux to floor / $\mathrm{W\,m^{-2}}$

Parameters

1 Model
0 NN

	1 Glück
	2 VDI 6020
2	Size of the room in x-direction (west-east) / m
3	Size of the room in y-direction (north-south) / m
4	Size of the room in z-direction (height) / m
5..10	Emission coefficients of each wall (same order as inputs and outputs)

Strings

None

Remarks

In general, the radiative heat exchange has to be calculated considering the emission of each surface in direction of another surface, the reflection of that surface back to the original and finally the re-reflexion of the original surface. To simplify the calculations, the net longwave emission of each surface is calculated from the own emission of the surface reduced by the absorbed irradiance at the surface, which comes from all the surrounding surfaces. For the surrounding surface intensities, their own emission is calculated and the reflection of a mean room radiation intensity is added.