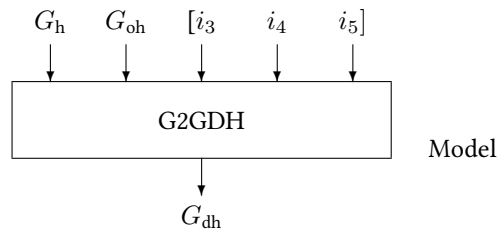


Block G2GDH

The G2GDH block returns the diffuse radiation according to various correlations for radiation hourly data.



Name	G2GDH
Function	em0009
Inputs	2 ... [5]
Outputs	1
Parameters	1
Strings	0
Group	S

Inputs

- 1 Global radiation G_h / W m^{-2} on a horizontal plane
- 2 Global radiation outside the atmosphere G_{oh} / W m^{-2} on a horizontal plane
- 3..5 Model dependent (see Parameters section for further details)

Outputs

- 1 Diffuse radiation G_{dh} / W m^{-2} on a horizontal plane

Parameters

- 1 Correlation
 - 0 Orgill, Hollands
 - 1 Erbs, Klein, Duffie
 - 2 Hollands
 - 3 Reindl, Beckman, Duffie
 - 4 Hollands, Chra – this correlation requires the ground albedo ρ as third block input.
 - 5 Skartveit, Olseth – this correlation requires the zenith angle θ_z / $^\circ$ as third block input.
 - 6 Reindl, Beckman, Duffie – this correlation requires the zenith angle θ_z / $^\circ$ as third block input.

- 7 Reindl, Beckman, Duffie – this correlation requires three additional inputs: the zenith angle $\theta_z / ^\circ$ as third block input, the ambient temperature $T_a / ^\circ\text{C}$ as fourth input and the relative humidity as input number five.

Strings

None

Description The block calculates the fraction of hourly diffuse and global radiation on a horizontal surface mainly on the basis of the clearness index which is defined as

$$k_t = \frac{G_h}{G_{oh}}$$

Through the setting of the first block parameter one of several correlations can be chosen.

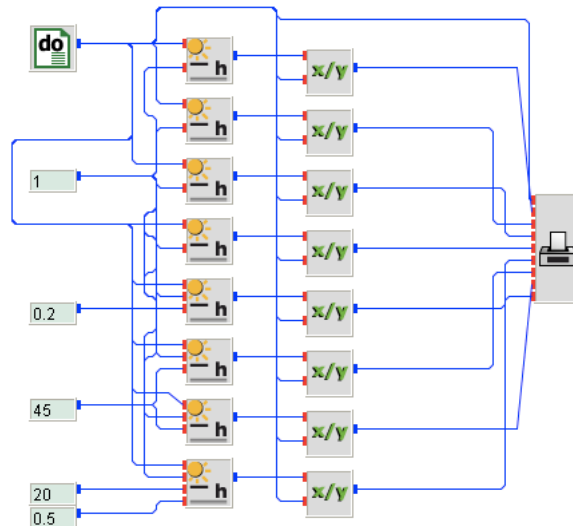
Orgill/Hollands The the Orgill/Hollands correlation is given by

$$\frac{G_{dh}}{G_h} = \begin{cases} 1.0 - 0.249 k_t & \text{if } 0 \leq k_t \leq 0.35 \\ 1.557 - 1.84 k_t & \text{if } 0.35 < k_t \leq 0.75 \\ 0.177 & \text{if } k_t > 0.75 \end{cases}$$

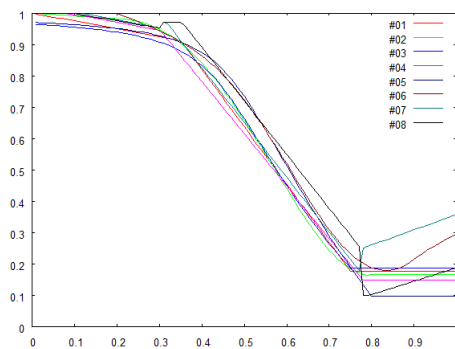
Erbs/Klein/ Duffie The Erbs/Klein/Duffie-Korrelation correlation is given by

$$\frac{G_{dh}}{G_h} = \begin{cases} 1.0 - 0.09 k_t & \text{if } 0 \leq k_t \leq 0.22 \\ 0.9511 - 0.1604 k_t + 4.388 k_t^2 - 16.638 k_t^3 + 12.336 k_t^4 & \text{if } 0.22 < k_t \leq 0.80 \\ 0.165 & \text{if } k_t > 0.80 \end{cases}$$

g2gdh.vseit



The idea of this example is exactly the same as in the example for block [G2GDD](#) only that correlations for hourly data are presented here. For further details, please refer to the example of block [G2GDD](#).



See also [Block G2GDD](#) and [G2GDM](#)