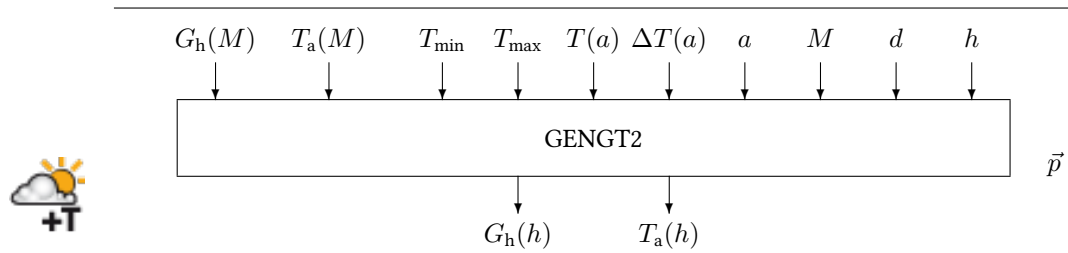


## Block GENG2

The GENG2 block generates a series of hourly radiation and temperature data from monthly mean values. Optionally, hourly values of relative humidity may be generated. When a minute input is connected and different from zero, GENG2 performs a linear interpolation between the two corresponding hours.

Internally, it simply calls [GENGT](#) which uses an old convention for timezone and longitude.



|                   |             |
|-------------------|-------------|
| <b>Name</b>       | GENGT2      |
| <b>Function</b>   | em0122      |
| <b>Inputs</b>     | 10 ... [12] |
| <b>Outputs</b>    | 3           |
| <b>Parameters</b> | 8 ... [10]  |
| <b>Strings</b>    | 0           |
| <b>Group</b>      | S           |

### Inputs

- 1 Global horizontal irradiance  $G_h(M)$  /  $\text{W m}^{-2}$  (monthly)
- 2 Ambient temperature  $T_a(M)$  /  $^{\circ}\text{C}$  (monthly)
- 3 Daily minimum ambient temperature  $T_{\min}$  /  $^{\circ}\text{C}$
- 4 Daily maximum ambient temperature  $T_{\max}$  /  $^{\circ}\text{C}$
- 5 Yearly average ambient temperature  $T(a)$  /  $^{\circ}\text{C}$
- 6 Maximum ambient temperature difference  $\Delta T(a)$  /  $^{\circ}\text{C}$
- 7 Year  $a$
- 8 Month  $M \in [1, 12]$
- 9 Day  $d \in [1, 31]$
- 10 Hour  $h \in [0, 23]$
- 11 Relative humidity  $\varphi(M)$  (monthly)
- 12 Minute  $m \in [0, 59]$

### Outputs

- 1 Global radiation  $G_h(h)$  /  $\text{W m}^{-2}$
- 2 Ambient temperature  $T_a(h)$  /  $^{\circ}\text{C}$
- 3 Relative humidity  $\varphi(h)$

### Parameters

- 1 Latitude  $\varphi \in [-90^{\circ}, +90^{\circ}]$ , northern hemisphere positive
- 2 Longitude  $\lambda \in [-180^{\circ}, 180^{\circ}]$ , **east of Greenwich**; values west of Greenwich may be used with a minus sign
- 3 UTC Time zone  $Z \in [-12, 12]$ , Greenwich Mean Time  $Z = 0$ , Central European Time  $Z = +1$ .
- 4 Variance factor  $f_{\sigma}$  to the Gordon / Reddy correlation, eq ??; if unknown  $f_{\sigma} = 1$  is recommended
- 5 Coefficient  $c_{\sigma}$  corresponding to the year-to-year variability due to different climatic conditions. When  $c_{\sigma}$  is set to zero the year-to-year variability is omitted.  $c_{\sigma} = 0.185$  approximates North American variability, while  $c_{\sigma} = 0.3$  approximates European variability
- 6 Autocorrelation coefficient  $\rho(1)$  at a lag of one day; if unknown  $\rho(1) = 0.3$  is recommended
- 7 Autocorrelation coefficient  $\rho(2)$  at a lag of two days; if unknown  $\rho(2) = 0.57\rho(1)$  is recommended
- 8 Initialization  $I_{\text{seed}}$  of random number generator
- 9 Maximum allowed deviation between given monthly mean temperature and calculated value ( $0.1^{\circ}\text{C}$  by default)
- 10 Maximum number of allowed iterations for temperature synthesis (2000 by default)

### Strings

None

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