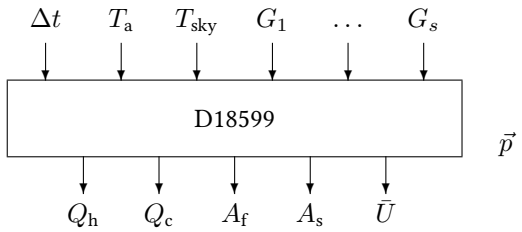
Block D18599

The D18599 block calculates the energy balance of a building for heating and cooling based on DIN 18599.

DIN 18599



Name	D18599
Function	bs0014
Inputs	4 . . . [1000]
Outputs	5
Parameters	29 . . . [1000]
Strings	0
Group	S

Inputs

1	Month $\in [1, 12]$
2	Ambient temperature / °C
3	Sky temperature / °C
4	Global irradiation surface 1 / W m^{-2}
..	
3+s	Global irradiation surface s (number of surfaces) / W m^{-2}

Outputs

1	Monthly heating energy demand q_h / kW h
2	Monthly cooling energy demand q_c / kW h
3	Total floor area A_f / m^2
4	Total surface area A_s / m^2
5	Mean U-value $\bar{U}$ / W m^{-2} K^{-1}

Parameters

1	Heated volume
2	Average storey height / m
3	Number of storeys above ground

4 Attic heating type (0=no room, 1=unheated, 2=heated)
5 Cellar heating type (0=no room, 1=unheated, 2=heated)
6 Indirectly heated area ratio
7 Effective heat capacity / $\mathrm{W\,h\,m^{-2}\,K^{-1}}$
8 Additional U-value for heat bridge / $\mathrm{W\,m^{-2}\,K^{-1}}$
9 Usage type (0=standard, 1=IWU)
10 Number z of zones
11 Area A_1 of zone 1 / $\mathrm{m^2}$
12 Internal gains $\dot{q}_\mathrm{i}$ / $\mathrm{W\,m^{-2}}$
13 Heating setpoint temperature / °C
14 Heating setback temperature / °C
15 Cooling setpoint temperature / °C
16 Usage hours per day / h
17 Usage days per year / d
18 Minimum air change rate zone 1 / $\mathrm{h^{-1}}$
19 Area A_2 of zone 2 (optional)
..
26 Minimum air change rate zone 2 (optional)
..
11+8z Number s of surfaces
12+8z Surface 1 type (1=wall, 2=ground, 3= roof, 4=flat roof)
13+8z A_{a1} Area above ground / m
14+8z A_{b1} Area below ground / m
16+8z U_1 / $\mathrm{W\,m^{-2}\,K^{-1}}$
16+8z A_{w1} Window area / $\mathrm{m^2}$
17+8z F_{r1} Window frame fraction
18+8z U_{w1} Window U-value / $\mathrm{W\,m^{-2}\,K^{-1}}$
19+8z g_1 Window g-value / $\mathrm{W\,m^{-2}\,K^{-1}}$
20+8z ρ_1 short-wave reflectance of surface 1
21+8z Surface 2 type
..
29+8z ρ_2 short-wave reflectance of surface 2
..

Strings

None

ggfls. aktualisieren !!!

```
s 0 const
p 0 0
s 1 do
p 1 1 12 1 % Months
s 2 polyg 1
p 2 12 % Days per month
%  JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT    NOV    DEC
   1 31  2 28  3 31  4 30  5 31  6 30  7 31  8 31  9 30  10 31  11 30  12 31
s 3 gain 2
p 3 24 % Hours per day
s 4 d18599 3 20 21 0 103 104 101 102 100 % Ta Tsky Gr. S_1 S_2 S_3 S_4 Roof
p 4
775       % Heated Volume (vBrutto)
2.5       % Average storey height / m
1         % Number of storeys above ground
0         % Attic heating type (0=no room, 1=unheated, 2=heated)
0         % Cellar heating type (0=no room, 1=unheated, 2=heated)
0.25      % Indirectly heated area ratio
90.0      % Effective heat capacity
0.10      % Additional U-value for heat bridge
1         % Usage type (0=standard, 1=IWU, 99=invald)
1         % Number $z$ of zones
225       % #1 Area of zone 1 (sqm)
13        % #2 Internal gains of zone 1
21        % #3 Heating setpoint temperature zone 1 (tSetHeat)
17        % #4 Heating setback temperature zone 1 (tSetbackHeat)
24        % #5 Cooling setpoint temperature zone 1 (tSetCool)
14        % #6 Usage hours per day zone 1
300       % #7 Usage days per year zone 1
8.3       % #8 Minimum air change rate zone 1 (h^-1)
6         % Number of surfaces = BP(11+8z)
% #1 Surface type (1=wall, 2=ground 3=roof, 4=flat roof), #2 Areas above ground
% #3 Areas below ground, #4 U-value, #5 Window area, #6 Window frame fraction
% #7 Window U-value, #8 Window g-value, #9 Short-wave reflectance
% #1   #2  #3    #4   #5  #6   #7    #8    #9
  2    0  225  0.62   0   0    0     0     0   % groundsurface (beta=0, gamma=n.a.)
  1   45    0  0.83   9   0.3  2.57  0.76  0.3 % wallsurface   (90, 0) N
  1   45    0  0.83   9   0.3  2.57  0.76  0.3 % wallsurface   (90, 90) E
  1   45    0  0.83   9   0.3  2.57  0.76  0.3 % wallsurface   (90, 180) S
  1   45    0  0.83   9   0.3  2.57  0.76  0.3 % wallsurface   (90, 270) W
  4  225    0  0.43   0   0    0     0     0.2 % flat roof     (0, n.a.)
s 20 polyg 1
p 20 12 % Monthly ambient temperature
% JAN   FEB   MAR   APR   MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
  1 0.3 2 1.4 3 5.4 4 9.6 5 13.6 6 16.9 7 18.8 8 18.4 9 15.3 10 9.9 11 5.2 12 1.2
s 21 polyg 1
p 21 12 % Monthly sky temperature
% JAN     FEB     MAR     APR    MAY   JUN   JUL   AUG   SEP   OCT     NOV      DEC
  1 -17.3 2 -16.9 3 -10.6 4 -5.7 5 0.2 6 5.3 7 5.7 8 8.3 9 1.5 10 -4.8 11 -10.0 12 -12.4
s 100 polyg 1
p 100 12 % Horizontal Stuttgart
% JAN  FEB  MAR   APR   MAY   JUN    JUL   AUG   SEP   OCT   NOV   DEC
```

```
  1 40 2 69 3 111 4 169 5 207 6 225  7 227 8 187 9 152 10 93 11 46 12 32
s 101 polyg 1
p 101 12 % South
% JAN  FEB  MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT    NOV   DEC
  1 59 2 85 3 103 4 118 5 117 6 117 7 122 8 120 9 131 10 109 11 66 12 51
s 102 polyg 1
p 102 12 % West
% JAN  FEB  MAR  APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
  1 28 2 47 3 75 4 105 5 130 6 130 7 136 8 114 9 103 10 61 11 31 12 24
s 103 polyg 1
p 103 12 % North
% JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT   NOV   DEC
  1 19 2 30 3 49 4 71 5 88 6 97 7 97 8 76 9 56 10 37 11 21 12 15
s 104 polyg 1
p 104 12 % East
% JAN  FEB  MAR  APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
  1 27 2 44 3 78 4 109 5 129 6 135 7 145 8 121 9 101 10 61 11 32 12 22

s 300 mul 4.1 4.3
s 301 mul 4.2 4.3
s 302 screen 4.1 4.2 300 301
```