

## Block FADYBS

The FADYBS block calculates the heating consumption of a zone via the numerical solved differential equation of a resistant-capacity element. FADYBS is short for Fast Dynamic Building Simulation. The FADYBS block is deprecated. Its sucessor is block FDBS.



FADYBS

|                   |             |
|-------------------|-------------|
| <b>Name</b>       | FADYBS      |
| <b>Function</b>   | bs0010      |
| <b>Inputs</b>     | 18          |
| <b>Outputs</b>    | 3           |
| <b>Parameters</b> | 55 ... [57] |
| <b>Strings</b>    | 0           |
| <b>Group</b>      | S           |

### Inputs

- 1 Second of the year / s
- 2 External ambient temperature / °C
- 3 Global radiation on vertical surface north direction /  $\text{W m}^{-2}$
- 4 Global radiation on vertical surface east direction /  $\text{W m}^{-2}$
- 5 Global radiation on vertical surface south direction /  $\text{W m}^{-2}$
- 6 Global radiation on vertical surface west direction /  $\text{W m}^{-2}$
- 7 Global radiation on horizontal surface /  $\text{W m}^{-2}$
- 8 Target temperature / °C
- 9 Internal gains / W
- 10 Effective air ventilation rate /  $\text{h}^{-1}$
- 11 Temperature of first adjacent zone / °C
- 12 Total thermal resistance to first adjacent zone /  $\text{K W}^{-1}$
- 13 Temperature of second adjacent zone / °C
- 14 Total thermal resistance to second adjacent zone /  $\text{K W}^{-1}$
- 15 Temperature of third adjacent zone / °C

- 16 Total thermal resistance to third adjacent zone /  $\text{K W}^{-1}$
- 17 Temperature of fourth adjacent zone /  $^{\circ}\text{C}$
- 18 Total thermal resistance to fourth adjacent zone /  $\text{K W}^{-1}$

#### Outputs

- 1 Operative internal temperature /  $^{\circ}\text{C}$
- 2 Heating energy demand per timestep / kWh
- 3 Cooling energy demand per timestep / kWh

#### Parameters

- 1 Additional U-value for heatbridges /  $\text{W m}^{-2} \text{K}^{-1}$
- 2 U-value external wall 1 /  $\text{W m}^{-2} \text{K}^{-1}$
- 3 Area external wall 1 /  $\text{m}^2$
- 4 U-value external wall 2 /  $\text{W m}^{-2} \text{K}^{-1}$
- 5 Area external wall 2 /  $\text{m}^2$
- 6 U-value external wall 3 /  $\text{W m}^{-2} \text{K}^{-1}$
- 7 Area external wall 3 /  $\text{m}^2$
- 8 U-value external wall 4 /  $\text{W m}^{-2} \text{K}^{-1}$
- 9 Area external wall 4 /  $\text{m}^2$
- 10 U-value external wall 5 /  $\text{W m}^{-2} \text{K}^{-1}$
- 11 Area external wall 5 /  $\text{m}^2$
- 12 U-value of window north 1 /  $\text{W m}^{-2} \text{K}^{-1}$
- 13 Area window north 1 /  $\text{m}^2$
- 14 Total energy transmission of window north 1
- 15 Frame fraction of window north 1 / %
- 16 U-value of window north 2 /  $\text{W m}^{-2} \text{K}^{-1}$
- 17 Area window north 2 /  $\text{m}^2$
- 18 Total energy transmission of window north 2
- 19 Frame fraction of window north 2 / %
- 20 U-value of window east 1 /  $\text{W m}^{-2} \text{K}^{-1}$
- 21 Area window east 1 /  $\text{m}^2$
- 22 Total energy transmission of window east 1
- 23 Frame fraction of window east 1 / %
- 24 U-value of window east 2 /  $\text{W m}^{-2} \text{K}^{-1}$
- 25 Area window east 2 /  $\text{m}^2$
- 26 Total energy transmission of window east 2
- 27 Frame fraction of window east 2 / %
- 28 U-value of window south 1 /  $\text{W m}^{-2} \text{K}^{-1}$
- 29 Area window south 1 /  $\text{m}^2$
- 30 Total energy transmission of window south 1
- 31 Frame fraction of window south 1 / %
- 32 U-value of window south 2 /  $\text{W m}^{-2} \text{K}^{-1}$
- 33 Area window south 2 /  $\text{m}^2$
- 34 Total energy transmission of window south 2

35 Frame fraction of window south 2 / %  
 36 U-value of window west 1 /  $\text{W m}^{-2} \text{K}^{-1}$   
 37 Area window west 1 /  $\text{m}^2$   
 38 Total energy transmission of window west 1  
 39 Frame fraction of window west 1 / %  
 40 U-value of window west 2 /  $\text{W m}^{-2} \text{K}^{-1}$   
 41 Area window west 2 /  $\text{m}^2$   
 42 Total energy transmission of window west 2  
 43 Frame fraction of window west 2 / %  
 44 U-value of window horizontal 1 /  $\text{W m}^{-2} \text{K}^{-1}$   
 45 Area window horizontal 1 /  $\text{m}^2$   
 46 Total energy transmission of window horizontal 1  
 47 Frame fraction of window horizontal 1 / %  
 48 U-value of window horizontal 2 /  $\text{W m}^{-2} \text{K}^{-1}$   
 49 Area window horizontal 2 /  $\text{m}^2$   
 50 Total energy transmission of window horizontal 2  
 51 Frame fraction of window horizontal 2 / %  
 52 Net volume of zone (Air-volume) /  $\text{m}^3$   
 53 Net area / useful area /  $\text{m}^2$   
 54 Specific thermal capacity /  $\text{W m}^{-2} \text{K}^{-1}$   
 55 Temperature of initialisation /  $^{\circ}\text{C}$   
 56 Heating on (0) or off (1)  
 57 Cooling on (0) or off (1)  
 None

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