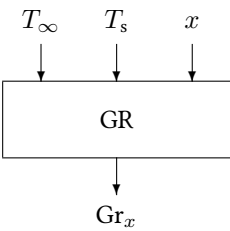


Block GR

The GR block calculates the Grashof number for air as an ideal gas.

Gr



Name	GR
Function	st0033
Inputs	3
Outputs	1
Parameters	0
Strings	0
Group	S

Inputs

- 1

Fluid temperature T_∞ / °C
- 2

Surface temperature T_s / °C
- 3

Length x / °C

Outputs

- 1

Grashof number Gr_x

Parameters

None

Strings

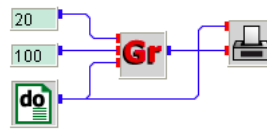
None

Description The Grashof number is defined as

$$\text{Gr}_x = \frac{gx^3\beta\Delta T}{\nu^2}$$

where g is gravitational acceleration 9.81 m s^{-2} , x is a characteristic length, $\beta = 1/T$ the thermal extension coefficient, ΔT the temperature difference between fluid and surface, and ν the kinematic viscosity.

gr.vseit



The Grashof number is plotted by a **PLOT** block as a function of length, for a fluid temperature of 20 °C and a surface temperature of 100 °C, both set by **CONST** blocks.

