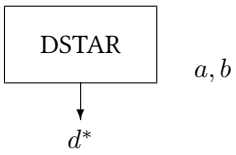
Block DSTAR

The DSTAR block calculates the equivalent diameter of a rectangular channel.





Name	DSTAR
Function	st0016
Inputs	0
Outputs	1
Parameters	2
Strings	0
Group	C

Inputs

None

Outputs

1	Equivalent diameter d^* / m

Parameters

1	Channel width a / m
2	Channel height b / m

Strings

None

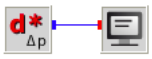
Description

The equivalent diameter d^* is defined as the diameter of a concentric tube which has the same pressure drop per length as a channel with rectangular cross section when the volume flow of the air flux is equal to the volume flow in the channel with rectangular cross section. The equivalent diameter is calculated by

$$d^* = 1.27 \sqrt[5]{\frac{a^3\, b^3}{a+b}}$$

The side ratio of the rectangle should not exceed 1:5.

dstar.vseit



The DSTAR block calculates the equivalent diameter for a channel width of 0.3 m and a channel height of 0.2 m.

The SCREEN block displays the result.

```
0.269712
```