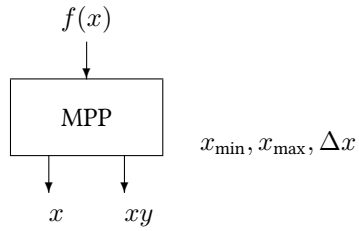
Block MPP

The MPP block simulates an ideal maximum power point tracker. In general, the MPP block can be used to find the maximum of any unimodal function.





Name	MPP
Function	fb0057
Inputs	1
Outputs	2
Parameters	3
Strings	0
Group	L

Inputs

1	Any signal $y = f(x)$ within the loop

Outputs

1	Signal x which is returned to a preceeding block until the product xy reaches its maximum
2	Product xy

Parameters

1	Lower limit $x_{\min}$ of the interval in which the iteration is performed
2	Upper limit $x_{\max}$ of the iteration intervall
3	Error tolerance Δx for the accuracy of the calculated maximum

Strings

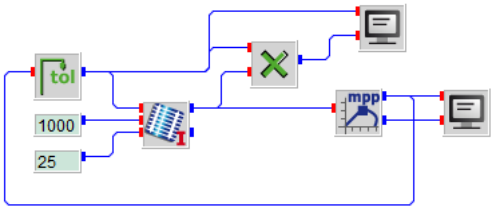
None

Description

The standard application of this block is the calculation of maximum-power- points of a photovoltaic generator under different radiation and temperature conditions. In this case the MPP block determines the maximum product of the naturally unimodal function $P = V \cdot I$ for a given $I(V)$ characteristic in the intervall $[V_{\min}, V_{\max}]$ as given by the parameters.

Please observe that the input $f(x)$ of the MPP block comes back to MPP as a result of the output of the MPP block x and that MPP maximizes the product $x \cdot f(x)$ and not the function $f(x)$ itself.

mpp.vseit



A PVI block is used to calculate the current of a PV module at Standard Test Conditions, i. e., global irradiance equal to 1000 W/m^2 and a module temperature of 25 degrees Celsius, as specified by two CONST blocks.

The output current of the PV module is connected to an MPP block, which iterates the module voltage between 0 and 30 V, as specified by the parameters. The error tolerance of the MPP block is set to 0.01 V, which means that the block stops the iteration when the voltage interval decreases to a value less than 0.01 V.

The output voltage of the MPP block is connected to a TOL block whose task it is to provide the input voltage to the PVI block in this case. The iteration can be observed by the SCREEN block which is connected to the TOL block.

When the iteration is finished, i. e., the voltage iteration interval shrank below 0.01 V the MPP block gives control to its successors, which is a SCREEN block in this case. Finally, the SCREEN block displays the DC power at the maximum-power point of the module

```
11.459    37.640
18.541    49.531
22.918     0.000
15.836    50.642
14.164    46.121
16.869    52.374
17.508    52.467
17.902    51.901
17.264    52.556
17.113    52.530
17.357    52.543
17.206    52.553
```

```
    17.299    52.554
    17.242    52.556
    17.277    52.556
    17.255    52.556
    17.250    52.556
    17.259    52.556
Maximum at 17.259 Volt and 52.556 Watt
```