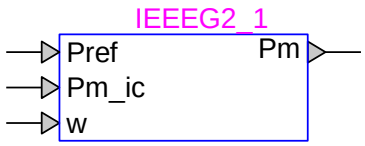
Exciters and Governors: Governor-Turbine IEEEG2



Governor-Turbine IEEEG2

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1 Description

This device is an implementation of a general model for turbine and governor IEEEG2. This device is implemented as described in [1]. Implementation details can be viewed by inspecting the subcircuit of this device.

1.1 Pins

This device has 4 pins:

Pin name	Type	Description	Units
Pref	Input	Power reference from load controller LCBF1	pu
Pm_ic	Input	Steady-state mechanical power at t = 0, for initialization	pu
w	Input	Mechanical speed	pu
Pm	Output	Turbine mechanical power	pu

1.2 Parameters

The default set of parameters are obtained from [1].

1.2.1 Governor tab

The parameters on the Governor tab are:

1. **Gain K**: governor gain
2. **Time constant T_1**: governor lag time constant
3. **Time constant T_2**: governor lead time constant
4. **Time constant T_3**: gate actuator time constant

1.2.2 Turbine tab

The turbine tab allows to input:

1. **Water starting time T_4**: water starting time
2. **Maximum gate opening P_{MAX}**: maximum gate opening
3. **Minimum gate opening P_{MAX}**: minimum gate opening

2 Initial conditions

The initial output is equal to the generator mechanical power (base for power) at t = 0 s.

3 References

[1] "Review of Existing Hydroelectric Turbine-Governor Simulation Models", Argonne national Laboratory, August 2013