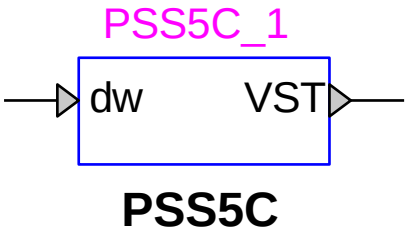
Exciters and Governors: Power System Stabilizer PSS5C



Tshibain Tshibungu, Jean Mahseredjian, 5/8/2017 12:53 PM

1 Description

This device is an implementation of the IEEE type PSS5C power system stabilizer model. 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 2 pins:

Pin name	Type	Description	Units
dw	Input	Speed deviation	pu
VST	Output	PSS output	pu

1.2 Parameters

The default set of parameters can be found in [1].

1.2.1 Data tab

The parameters on the Data tab are:

1. **Gain K_{VL}**: very low band gain
2. **Frequency F_{VL}**: very low band central frequency
3. **Upper limit V_{VLmax}**: very low band upper limit
4. **Lower limit V_{VLmin}**: very low band lower limit
5. **Gain K_L**: low band gain
6. **Frequency F_L**: low band central frequency
7. **Upper limit V_{Lmax}**: low band upper limit
8. **Lower limit V_{Lmin}**: low band lower limit

9. **Gain K_I**: intermediate band gain
10. **Frequency F_I**: intermediate band central frequency
11. **Upper limit V_{Imax}**: intermediate band upper limit
12. **Lower limit V_{Imin}**: intermediate band lower limit
13. **Gain K_H**: high band gain
14. **Frequency F_H**: high band central frequency
15. **Upper limit V_{Hmax}**: high band upper limit
16. **Lower limit V_{Hmin}**: high band lower limit
17. **Coefficient K_1**: coefficient
18. **Coefficient K_2**: coefficient
19. **Coefficient K_3**: coefficient
20. **Maximum PSS output V_{STMAX}**: maximum PSS output
21. **Minimum PSS output V_{STMIN}**: minimum PSS output

2 Initial conditions

The initial output signal is zero from the steady-state solution.

3 References

[1] "IEEE Recommended Practice for Excitation System Models for Power System Models for Power System Stability Studies," IEEE Standard 421.5-2016.