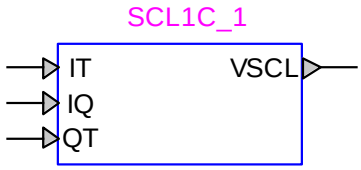
Exciters and Governors: Stator Current Limiter SCL1C



SCL1C

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Tshibain Tshibungu, Jean Mahseredjian, 5/9/2017 6:49 PM

1 Description

This device is an implementation of the IEEE type SCL1C stator current limiter 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 4 pins:

Pin name	Type	Description	Units
IT	Input	Magnitude of the stator current of the generator	pu
IQ	Input	Magnitude of the stator reactive current of the generator	pu
QT	Input	Generator reactive power output	pu
VSCL	Output	Stator Current Limiter signal	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. **Current I_{SCLlim}**: SCL terminal current pick up level
2. **Time constant T_{IT}**: Terminal current transducer equivalent time constant
3. **Factor K**: SCL timing characteristic factor
4. **Time constant T_{QSCL}**: Reactive current transducer equivalent time constant
5. **Dead-band I_{Qmin}**: Dead-band for reactive current
6. **Dead-band V_{SCLdb}**: Dead-band for reactive power or power factor
7. **Time delay T_{INV}**: Inverse time delay after pickup

8. **Time delay T_{DSCL}**: Fixed-time delay after pickup
9. **Gain K_{Poex}**: SCL proportional gain (overexcited range)
10. **Gain K_{Ioex}**: SCL integral gain (overexcited range)
11. **Gain K_{Puex}**: SCL proportional gain (underexcited range)
12. **Gain K_{Iuex}**: SCL integral gain (underexcited range)
13. **Maximum limit V_{SCLmax}**: SCL upper integrator limit
14. **Minimum limit V_{SCLmin}**: SCL lower integrator limit
15. Stator Current Limiter Control option: see explanations below.
16. Time Selector Control option: see explanations below.

There are two possible selections for the Stator Current Limiter Control option:

1. SCL response is derived from the reactive current.
2. SCL response is derived from the reactive power

There are two possible selections for the Time Selector Control option:

1. Fixed-time delay.
2. Inverse time delay

2 Initial conditions

The SCL is supposed to be inactive during the steady-state conditions.

3 References

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