

Parameters related to transient simulation

In the following, we describe parameters related to transient simulation (see Chapter 6 in Part-1). Some of the parameters would also apply to SSW computation since SSW involves transient simulation as well (see Fig. 7.3 in Part-1).

- * **back_euler**: (yes/no) for Backward Euler method with constant time step (given by **delt_const**). In this case, a few smaller time steps may be taken to account for corners in input waveforms, for example.
- * **back_euler_auto**: (yes/no) for Backward Euler method with NR-based adaptive time steps (see Sec. 6.6 in Part-1)
- * **trapezoidal**: (yes/no) for trapezoidal method with constant time step (given by **delt_const**). In this case, a few smaller time steps may be taken to account for corners in input waveforms, for example.
- * **trapezoidal_auto**: (yes/no) for trapezoidal method with NR-based adaptive time steps (see Sec. 6.6 in Part-1)
- * **gear2**: (yes/no) for second-order Gear (BDF) method with constant time step (not available for SSW)
- * **trbdf2**: (yes/no) for TR-BDF2 method (not available for SSW)
- * **constant_step**: (yes/no) for forcing constant time steps. In this case, the step size is always equal to **delt_const**. If **constant_step** is selected, **back_euler** or **trapezoidal** must also be selected. (not available for SSW)
- * **t_start**: (real number) starting time for transient simulation
- * **t_end**: (real number) ending time for transient simulation
- * **itmax_trns**: (integer) maximum number of time points (default: 100,000). This is a “safety feature.” If the user by mistake creates conditions which calls for a large number of time points, SEQUEL will produce an error message. If there is a genuine requirement, the user should increase **itmax_trns** suitably.
- * **delt_const**: (real number) serves as the constant time step for BE and TRZ methods, and as the first time step for methods with adaptive time steps.
- * **delt_min**: (real number) smallest time step allowed (default: $0.0002 \times \text{delt_const}$)
- * **delt_max**: (real number) largest time step allowed (default: $10 \times \text{delt_const}$)
- * **fctr_stepred**: (real number) factor for reducing time step in adaptive time step methods (k_{down} in Sec. 6.6 in Part-1, default: 0.6)
- * **fctr_stepinc**: (real number) factor for increasing time step in adaptive time step methods (k_{up} in Sec. 6.6 in Part-1, default: 1.5)

- * `itmax_stepred`: (integer) maximum number of successive reductions in the time step at a given time point (default: 20)
- * `trbdf2_tolr`: (real number) tolerance for TR-BDF2 method (default: 10^{-5})
- * `itmax_trbdf2`: (integer) maximum number of successive reductions in the time step at a given time point when TR-BDF2 method is used (default: 20)