

Table 2.1 Outline of the IEEJ East 10-machine System Model

Items	Contents	Remarks
System Rated Capacity	1,000 MVA	
System Frequency	50 Hz	
The Number of Generators	10 machines	
The Number of Nodes (Bus)	47 nodes	
The Number of Branches (Transmission Lines) (Transformers)	100 branches (78) (22)	1 transmission line (3-phase) circuit is counted as 1 branch.
The Total Sum of the Generator Rated Capacity and Output - Daytime (Heavy Load) - Nighttime (Light Load)	96,480 MVA (81,430 MW) 96,480 MVA (Generated : 48,630 MW) (Pumped : -12,000 MW)	
The Total Sum of the Loads - Daytime (Heavy Load) - Nighttime (Light Load)	80,000 MW 36,000 MW	
Generator Model	LGT = 4 in Y-method (All Generators)	
Generator Constants	NGT = 2 (Thermal Gen.) NGT = 6 (Nuclear Gen.) NGT = 8 (Hydraulic Gen.)	Refer to Table 1.1
Generator Inertia Constant	8.0 sec (Thermal & Nuclear) 10.0 sec (Hydraulic)	
Excitation System Model	LAT = 1 in Y-method (All Generators)	Refer to Fig. 1.1
Governor Model	LPT = 1 in Y-method (Thermal & Nuclear Gen.) LPT = 4 (Hydraulic)	Refer to Fig. 1.2, Fig. 1.3 Governor of the pumped generator is locked. (LPT = 0)
Step-up Transformer - Reactance (Self capacity base) - Tap Ratio	0.14 pu (for All Generators)  Refer to Table 2.2	Trans. capacity is 1.1 times of the generator rated power output.
Transmission Line Model - Type of Line - Total Length	$\pi$ Type Equivalent Circuit TACSR 810mm <sup>2</sup> 4 conductors Loop System : 1,960 km Different Voltage Loop System : 500 kV 500 km 275 kV 400 km	All Transmission Lines consist of 2 circuits of 3-phase line)
Load Characteristic	NLT = 2 in Y-method (All Loads)	Refer to Fig. 1.4
Governor Spinning Reserve (PLM) Load Frequency Characteristic - Active Power Load - Reactive Power Load	Refer to Table 2.2  4 % / Hz (All Loads) -2 % / Hz (All Loads)	Refer to Fig. 1.3