

Electric Power System Simulator Type A1

Understanding the Transmission System Characteristics
by experiencing Electrical Phenomenon



V

f

$\Delta\theta$

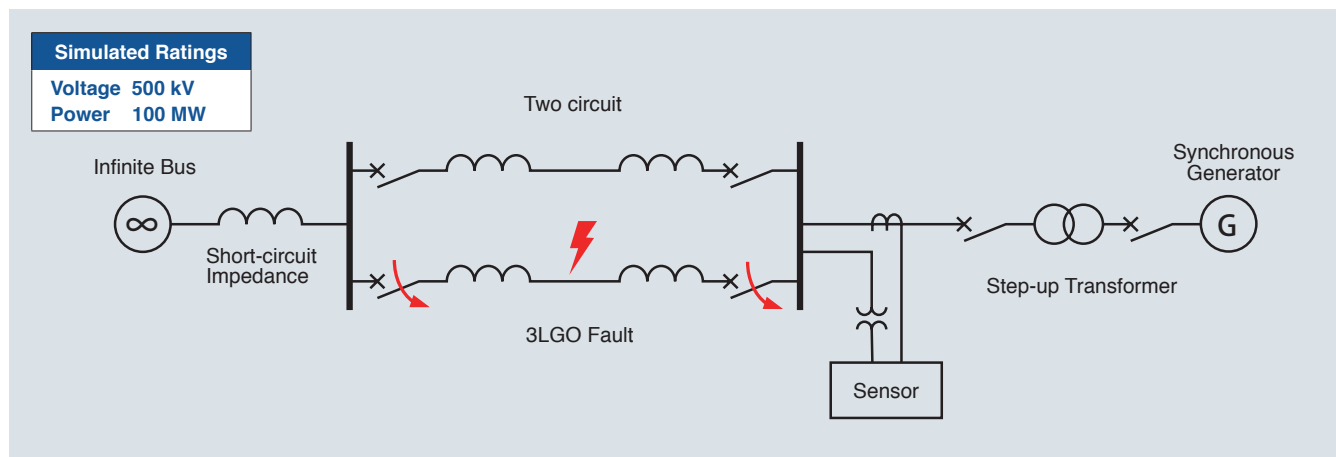
Experience the Electric Power System in your Office

Realistic reproduction of Transmission Systems

Experience the electrical phenomenon in power grids with the miniature grid model

The electrical power system simulator type A1 is an analog simulator, which emulate a transmission system consisting of experience the lines and a synchronous generator with miniature models.

Electrical characteristics of the transmission systems, which we cannot touch in reality, can be simulated. And major electrical phenomenon in transmission systems are experienced.



Architecture

The electrical power system simulator type A1 reproduces the transmission system above with a synchronous generator model connected to 20 V transmission line models.

Ratings	
Voltage	20 V
Power	1.15 W

Touch panel

Generator model

- Digital arithmetic operation
- Synchronous machine in Park eq.
- AVR ctrl.
- GOV ctrl.
- Transformer

Sensor

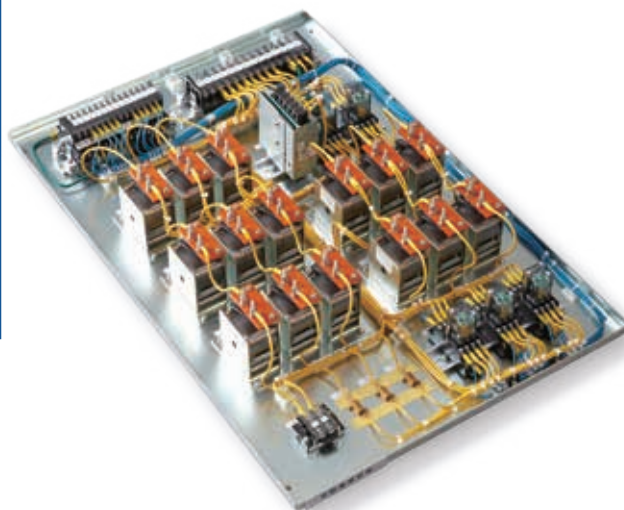
- Detected : AC voltage, current
- Analog outputs : AC voltage, current
- Communication outputs : P, Q, V, I

Infinite bus

- 3 phase voltage source
- Adjusted : V, f

Grid model

- Reactors for short-circuit impedance
- Reactors for transmission lines
- 3LGO fault
- Fault clearing by circuit breakers



Size : W598×H1680×D879 mm

or Lab, to Understand the Main Features of Grid

Real phenomenon monitored on the panel Best for learning power systems

The electrical phenomenon in power grids are simulated in real-time.
Three basic characteristics of transmission networks could be understood in 30 minutes.

|| Learning items ||

- V Voltage Stability**
Voltage level is maintained by reactive power support, as the AVR of synchronous generators.
- F Frequency Stability**
Frequency is kept stable through the output adjustment at power stations, as the governor control.
- S Rotor Angle Stability**
For stable generation and transmission, phase-angle in the power system is managed for the synchronism of all generators.

Applied as platform for power system research

The simulator can apply for the researches of power systems, including the mass penetration of renewable energies.

|| Expended options ||

- R Renewable Energy**
Installing the generator software, control effects of distributed energy resources are verified.
- C Communication Technology**
Connection with communication terminals enables the evaluation of bidirectional communication control.
- P Power System Protection and Control**
By extension of the grid model, the transmission system protection logics are evaluated.

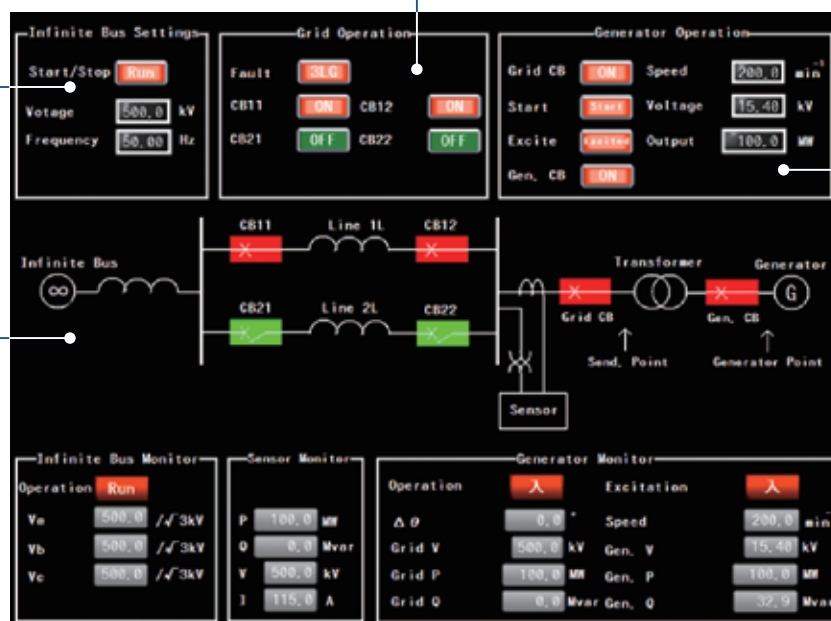
Touch Panel Screen

Infinite Bus Settings

Voltage and Frequency can be changed rapidly

Fault Occurrence

3 phase ground fault and CB open



Grid Monitoring

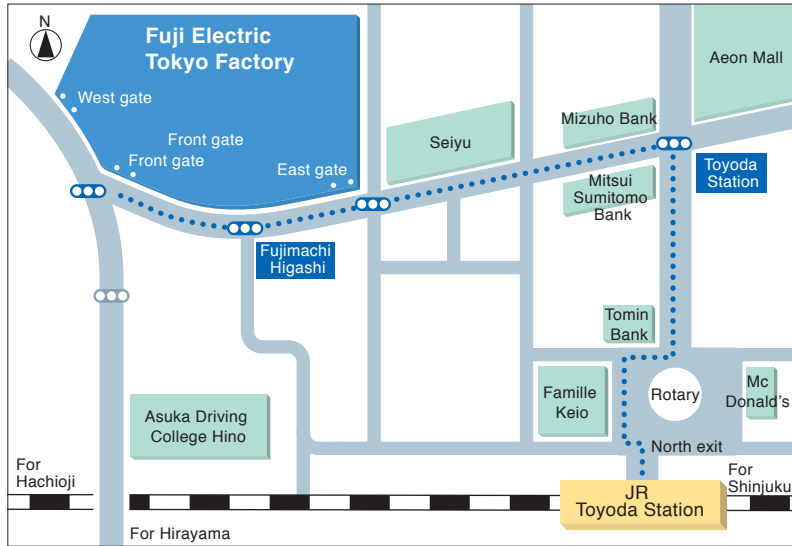
Fluctuations of grid monitored in real-time

Generator Operation

Basic operation and characteristics of generator demonstrated

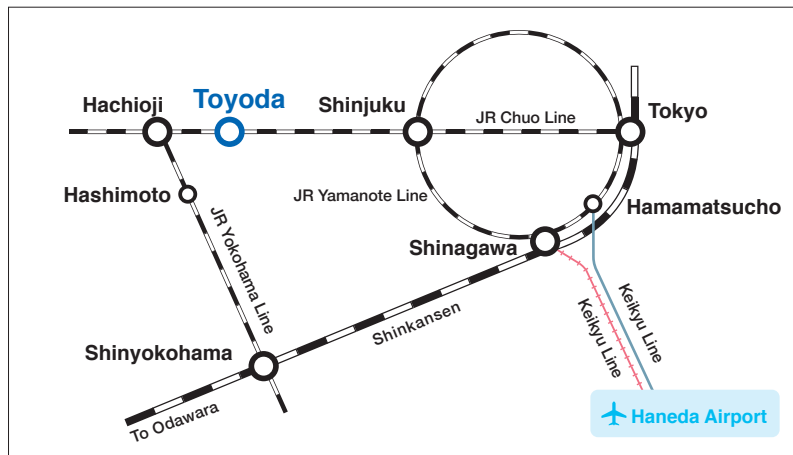
You can try our Electric Power System Simulator anytime at the exhibition room at Fuji Electric Tokyo Factory.

Access to the Tokyo Factory



- 1, Fuji-machi, Hino-city, Tokyo 191-8502, Japan
- 8-minute walk from Toyoda Station (JR Chuo Line) to the front gate

Access to Toyoda Station



- Tokyo Station (JR Chuo Line) → Toyoda Station, about 50 minutes
- Shin-Yokohama Station (JR Yokohama Line) → Toyoda Station, about 50 minutes
- Haneda Airport (Tokyo Monorail, Keihin Kyuko) → Toyoda Station, about 90 minutes

Fuji Electric Co., Ltd.

Gate City Ohsaki, East Tower, 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
 Phone : (03)5435-7111