



PRE-Serie: Power Full Network Simulator

- ✓ Regenerative 4-quadrant AC source
- ✓ Regenerative grid simulator
- ✓ 6... 22 kVA in 3 U
- ✓ Output voltage max. 450 V
- ✓ Output current max. 35 Aeff/105 Apeak in 3-phase operation (per phase)
- ✓ Output current max. 105 Aeff/315 Apeak, in single-phase operation
- ✓ Frequency range 0.001 ... 5000 Hz
- ✓ Up to 10 devices can be connected in parallel
- ✓ Output modes: AC, DC, AC+DC, DC+AC
- ✓ Rise time voltage > 3 V/µs
- ✓ LIST, WAVE, PULSE, STEP and advanced mode for waveform programming
- ✓ Programming of harmonics up to the 100th order
- ✓ Includes waveform library with 30 waveforms according to 1741SA, IEEE1547, IEC62116, NB/T32004, T/CPSS1007-2020
- ✓ Simulation of R+L cable impedances according to IEC61000-3-2, 3-3 standards

Test objects: PV inverters, converters, energy storage systems, microgrids, power hardware-inthe-loop (PHIL), power supply units for electric vehicles, on-board chargers, online UPSs

Description

ActionPower's PRE20 models are used for power tests and tests related to the local power supply network. The grid simulators are complete 4-quadrant AC power sources with full grid regeneration, designed for general electrical power tests such as domestic appliances and industrial electronics that require a programmable input source.

Waveforms

PRE20 models can easily simulate Power Line Disturbance (PLD) using List, Wave, Step, Pulse, Advanced modes. PRE20 models support 100 groups of user-defined waveforms. The synthesis function enables periodic harmonic voltage waveforms up to the 100th order based on a fundamental frequency of 40 ... 70 Hz. The interharmonic function allows frequency sweeps in the range of 0.01 ... 5000 Hz in addition to the 50/60 Hz fundamental frequency. This special function supports users in localising resonance points. The harmonic measurement function can measure harmonics up to the 50th order of voltage or current and display values such as fundamental voltage, DC component and total harmonic distortion.

Waveform library

The PRE20 models can be applied to the International Standards for AC Voltage Testing 1741SA, IEEE1547, IEC62116, NB/T32004, T/CPSS1007-2020. 30 DST waveforms are integrated, which can be called up with a button for harmonic tests according to related standards. Internal resistance simulation The PRE20 models are equipped with R and L impedance simulation





functions so that the output voltage and current are linked to R and L parameters. For example, cable impedances are simulated in accordance with the IEC61000-3-2, 3-3 standards.

Regenerative linear AC load

In addition to the power supply function, the PRE20 models can also realise a linear load simulation function and regenerative feeding into the grid, which enables versatile use. The PRE20 series has up to 12 integrated RLC network models with flexible parameters to simulate linear load characteristics and fully validate product performance tests under various impedance, three-phase balanced and unbalanced load modes. For products that require off-grid testing, such as BOBC, UPS, ESS, etc., the PRE20 series RLC load function can be used to realise the conversion of the source to load function of a device. This greatly simplifies the ATE hardware configuration and allows V2G, V2L, V2H and other tests to be performed at the same time.

Regenerative non-linear AC load

The AC load function includes the constant current, constant power and constant impedance operating modes. Other setting parameters are the crest factor (CF) and the power factor (PF). The rectifier mode can simulate the characteristics of a rectified load current. For this purpose, the CF is set from 1.414 to 5, resulting in a non-sinusoidal load function. Built-in standard waveforms are accessed with an AC load test button for the appropriate standards. Included are 2-pulse wave, 6-pulse wave, 12-pulse wave, 18-pulse wave, 24-pulse wave, positive half-wave, negative half-wave, leading half-wave and trailing half-wave.

Power hardware-in-the-loop

The PRE20 models have an extremely high dynamic response with a small-signal bandwidth of 10 kHz, a large-signal bandwidth of 2 kHz and a response time of 70 μ s. They can amplify the signals from the simulation system, the signal source or the control card and output them to the tested object and realise the PHIL function.