



# PLUTON Series®

## By SPHEREA

AC & DC POWER EMULATORS  
FROM 40 KW TO 2 MW



The **PLUTON® Series** is the result of over 5 years of advanced R&D, and represents **our most advanced AC/DC regenerative power platform to date.**

Designed as a **fully configurable 4-Quadrant (4Q) Power Emulator System**, PLUTON® can operate in multiple control modes (CC, CV, CR) and seamlessly adapt to a wide range of applications:

- **Power amplifier** — voltage or current controlled
- **Battery, fuel cell, or e-motor emulator**
- **Regenerative power source or load**, with full remote control capability

Leveraging an **innovative multi-level, high-frequency switching architecture**, PLUTON® delivers exceptional bandwidth, precision, and dynamic response — making it ideal for **real-time power system emulation.**

Its **embedded low-latency control core** enables **on-board custom model execution**, and the system can be **tightly coupled with third-party real-time simulators** for **Power-Hardware-in-the-Loop (P-HIL)** applications.

PLUTON® operates natively in both **AC and DC modes**, ensuring maximum flexibility across R&D and validation environments.

## KEY FEATURES

- > Modular system - up to 2 units in series and 50 in parallel
- > Smooth 4-Quadrant transitions, fully regenerative
- > Fast transient response < 50µs
- > Integrated waveform generation from DC up to 5 kHz
- > Wide bandwidth - 5kHz full span, 20kHz small signal
- > High speed Aurora optical interface
- > Embedded model execution, down to 1 µs refresh rate

## APPLICATIONS

- > Power Hardware In the Loop (P-HIL) with third-party simulators : Opal RT - Typhoon - RTDS
- > Converter testing - DC/DC, AC/DC, AC/AC topologies
- > Battery and Fuel Cell emulation & testing
- > eMotor and drive inverter simulation

## SPECIFICATIONS

POWER RANGE	0 - 40 kW per module up to 160 kW per cabinet up to 2 MW system
EFFICIENCY	94%
REGULATION MODES	CV, CC, CR
LATENCY	≤ 10 µs
VOLTAGE RISE TIME	≤ 100 µs
CURRENT RISE TIME	≤ 50 µs
DC MAX OUTPUT VOLTAGE	750 V per module 1500 V (in series)
MAX OUTPUT CURRENT	200 A per module Up to 5 kA
AC MAX OUTPUT VOLTAGE	250 Vrms per module 500 Vrms (in series)
FULL SPAN BANDWIDTH	0 - 5 kHz
SMALL SIGNAL BANDWIDTH	0 - 20 kHz

contact-spi@spherea.com

spherea-pi.com

