

RGS Series

Regenerative Grid Simulator

12 to 24kVA/kW, Scale up to 1.296 MVA/MW

Highest Performing & Intelligent 2-in1 Regenerative Grid Simulator with Load Option

High Power Density
Now up to 24kVA/kW in 4U



Key Features

- Regenerative Grid Simulator
 - 4-Quadrant AC & DC Power Source
 - AC/DC Regenerative Load Option
- Regenerative Power > 90% Energy Efficiency
- High Power Density – Up to 24kVA/kW in 4U
- Parallel up to 216kVA/kW per cabinet
- Parallel cabinets up to 432kVA/kW
- Three-Phase High Power Systems to 1.296 MVA/MW
- AC, DC (Optional AC+DC) Output Capability
- Single, Split, Three-Phase; Multi-Channel Mode
- Constant Power Voltage Range:
 - 350Vac L-N/606Vac L-L or $\pm 500V_{dc}$
- Exceptionally High AC Current
- RMS current up to 48A per phase (45Hz to 200Hz)
- High Frequency Range 15Hz - 200Hz
- Option F for 1200Hz
- Full Galvanic Isolation
- Isolated Neutrals Available (Option W)
- Waveform Capture and Scope Display
- Generate Harmonics AND Interharmonics included
- Built-in **SmartSource Suite** Remote Control
- LAN, GPIB, RS232, USB, ModBus TCP(Standard); CAN or CAN-FD (Optional)

Pre-Written Test Sequence Options:

IEC 61000-3/-4, IEEE 1547.1, and more.

Flexible Control



'2-in-1' RGS Series

The RGS Series is a high-performance regenerative grid simulator designed to emulate real-world utility grid conditions transportation electrification and grid modernization test applications. **Delivering up to 24 kVA/kW in a compact 4U, this series scales from 12 to 432 kVA/kW, with three-phase high-power configurations available up to 1.296 MVA/MW+.** Modular, flexible AC/DC power source and load operation with advanced waveform generation, enables precise grid emulation of events and user-defined conditions. Ideal for grid compliance testing to **IEEE 1547, UL 1741, IEC 61000-3/-4**, and more.

Application Examples

- EV Charging, On Board Chargers (OBC), V2G, V2X
- Smart-Grid Simulation, Solar PV/Grid-Tied Inverters
- Energy Storage Systems (ESS), Home ESS
- AI Power Servers
- IEC Compliance Testing, Test Labs, Research Lab
- Bidirectional Applications (e.g. motors) to address back EMFs

Highlights



2-in-1 Regen Grid Simulator
and Optional Load at full power



Ideal for Grid Compliance
Testing or Bidirectional applications



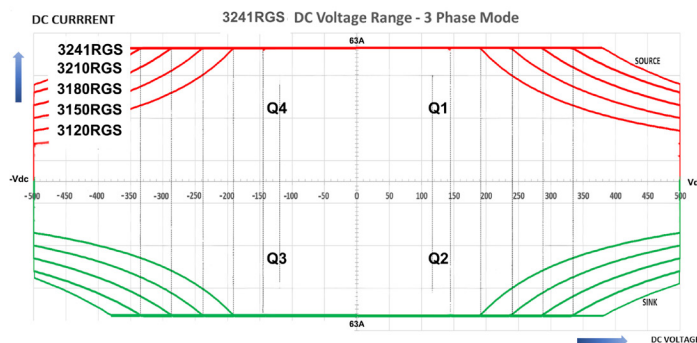
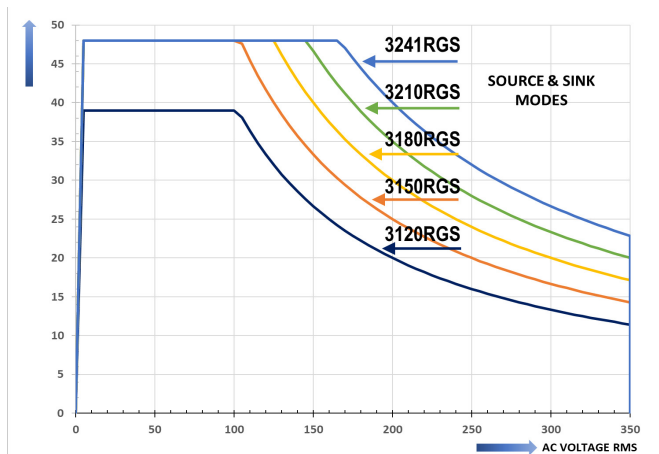
Exceptionally High Current
and 2s Overload Capability



AC, DC, (or AC+DC), Source or Load
Ultra Flexible Multi-Channel Testing

Constant Power, Wide Voltage Range

The RGS Series uses a single, constant power voltage range for both higher current at lower voltage and higher voltages at lower currents eliminating the need to switch between voltage ranges. The RGS's constant power voltage range allows for testing a broad range of conditions and test requirements without interruption of output power.



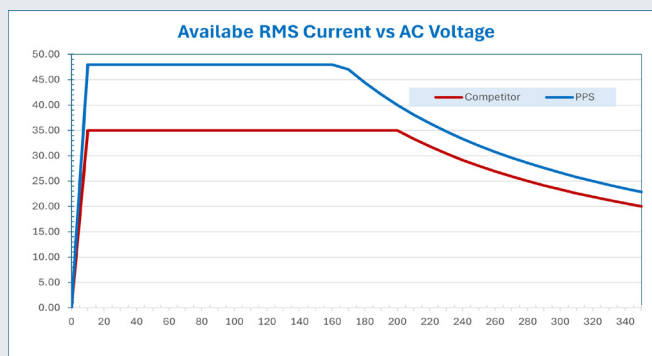
Get Max RMS Current up to 48A: More Current at Low Voltage

The RGS provides a wide range of current eliminating the risk of over or under sizing the power source.

It also provides a **max current per phase of 48A available up to 166.7Vrms from 45 to 200Hz**, providing up to 37% more current at lower voltage compared to a typical unit on the market that maxes out at 35A/phase.

Benefits:

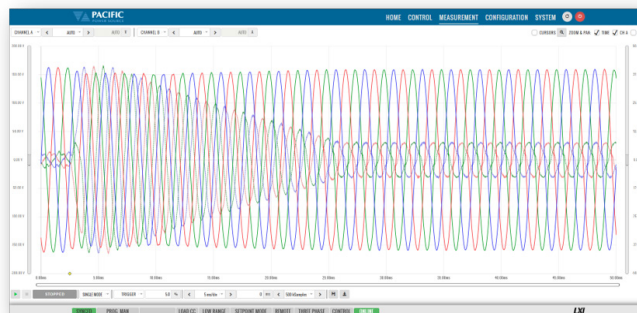
- Higher RMS current rating at lower voltage settings
- Reduces capital investment
- Test Constant Power AC input products down to lowest rated input voltage



PPS RGS provides 37% more current at lower voltage compared to competitors at lower voltage.

130% Overload Capability for 2s

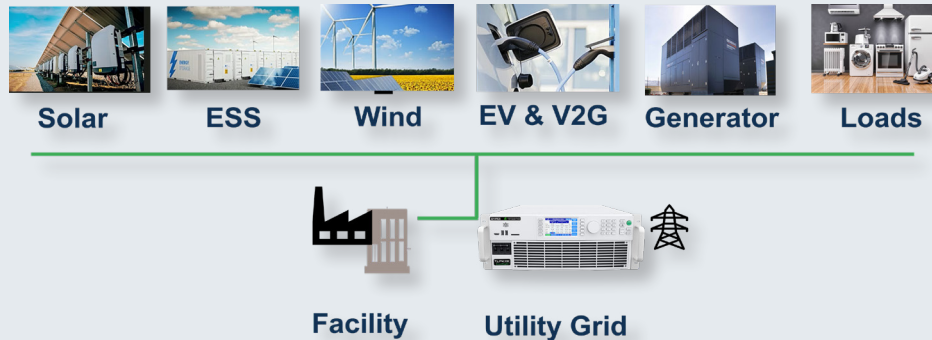
The RGS Series features overload capability, delivering 130% of rated current for up to 2 seconds to support inrush conditions during startup, transient events, and sudden load changes. Ideal for motor drives, industrial automation, and power conversion applications.



Waveform Example of Inductive Motor Emulation: 400Hz, 55A

Test Impacts of Microgrid & DER on the Grid

The **RGS Series** is ideal for testing regenerative and or bidirectional applications. Regenerative AC & DC power sources provide energy efficiency and significant cost savings by returning energy back to the facility. Regenerative bidirectional power flows are critical for simulating real-world conditions in transportation and renewable energy systems. Bidirectional power flows are also critical to prevent back-EMF in applications such as motors.



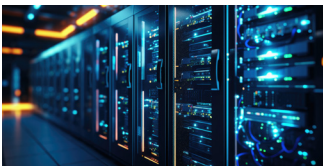
Simulating Power for AI Data Server Racks & Infrastructure



AI Data Servers, Supercomputing



Power Cooling Infrastructure, PDUs, UPS, HVDC Distribution & Converters



Burn-in Testing



Transformers

Test Solutions

- Regenerative Grid Simulator
- Regenerative AC & DC Load
- DC Load
- Bidirectional Power Source (for energy storage)

Ultimate Multi-Channel Testing With Six Output Configurations

Test a wide range of grid conditions and EUTs with six output configurations in AC or DC, source or load mode.

- **Isolated neutrals** allow each phase to operate independently as a voltage source, current source, or optional load.
- **Forms 1 through 3:** Common for single, split or three-phase AC connections.
- **Forms 4 through 6:** Test up to three EUTs' to be tested with the same source or load.

For example, test three independent single-phase 8 kW EUT's simultaneously using a single 24kW RGS unit.

- **Form 5:** Supports different frequencies on each phase simultaneously.

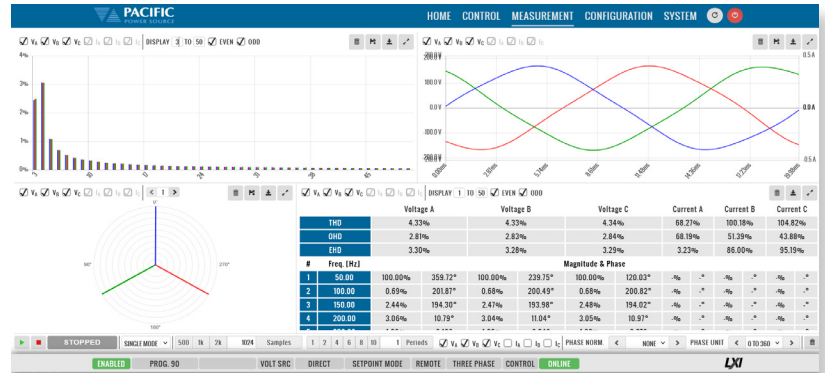
Simultaneous AC & DC Operation on Single Phases and Automatic Switching of Operation Modes

	FORM 1	FORM 2	FORM 3	FORM 4	FORM 5	FORM 6
Phase A	ONE PHASE	SPLIT PHASE	THREE PHASE	ONE PHASE A	ONE PHASE A	SPLIT PHASE
Phase B	ONE PHASE	SPLIT PHASE	THREE PHASE	ONE PHASE B	ONE PHASE B	SPLIT PHASE
Phase C	ONE PHASE	SPLIT PHASE	THREE PHASE	ONE PHASE C	ONE PHASE C	SPLIT PHASE

Mixed AC/DC, Source / Load mode combinations available in Forms 4, 5 and 6.

Powerful Waveform & Measurement Tools

- Built-in waveform digitizer with scope function
- Fast transient capabilities at 200µsec
- LIST, PULSE and STEP Transients
- Over 200 Arbitrary Waveform
- 10 Standard, Sine, Square, Triangle, Clipped
- Harmonics AND Interharmonics
- Pre-written test standards for grid compliance testing (Option)

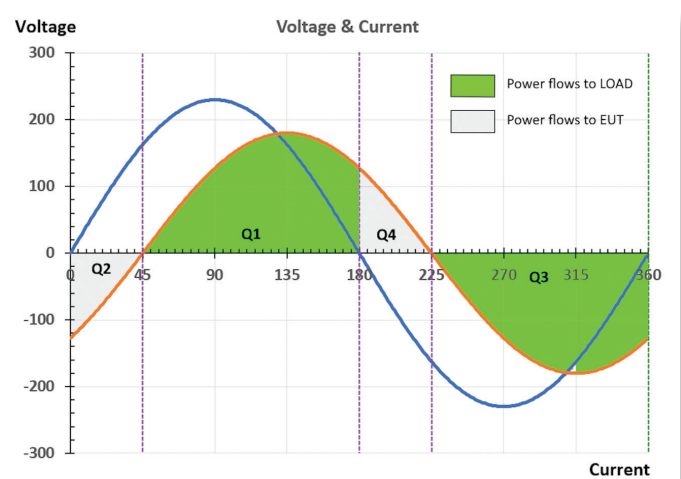
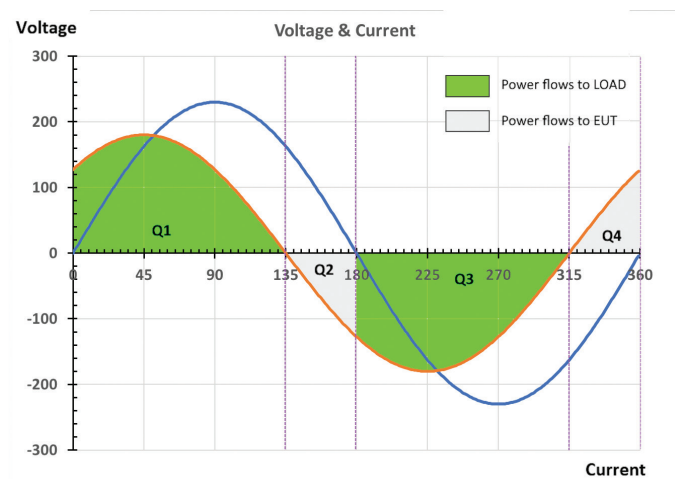


Easily Generate Harmonics & interharmonics

Fully Test AC Power with 4-Quadrant Load (Option L)

Supports testing of PV inverters, V2G systems, EV chargers (EVSE), batteries, UPS systems, and AC/DC power supplies. Full four-quadrant operation with programmable phase shift enables simulation of inductive, capacitive, linear, non-linear (rectified), leading, and lagging power factor loads.

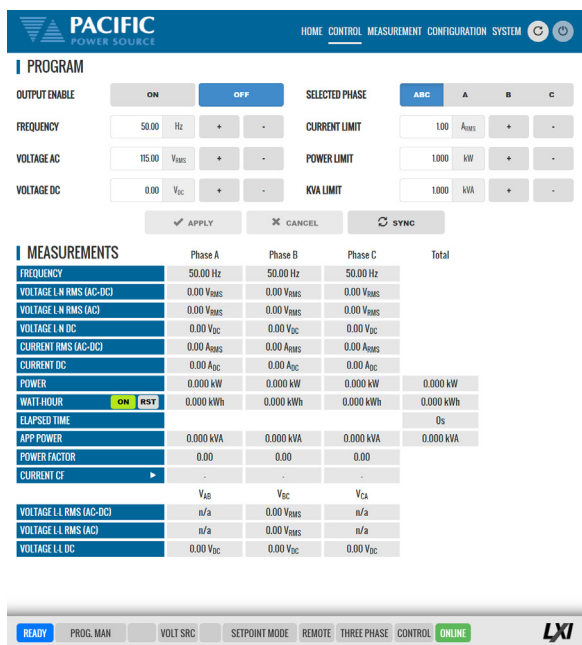
- AC Modes: Constant Current, Constant Power & Apparent Power, Constant Resistance, CR+CC, CC / CS Rectifier Mode 1 ϕ & 3 ϕ
- DC Modes: Constant Current, Constant Power, Constant Resistance, CR+CC



User Friendly Control Options

Multiple Control Options

- Intuitive Touch Screen LCD Display
- Soft Key driven Menus
- Built-In **SmartSource Suite** Web Interface
- LAN, GPIB, RS232 & USB, ModBus TCP(Standard); CAN or CAN-FD (Optional)
- Supports external touch screen monitor via Video Output Interface



Simplify Test Automation with **SmartSource Suite** Remote Control Platform

Easily monitor, control, and manage testing with the RGS's **SmartSource Suite** remote control platform. Use the built-in web browser interface with real-time control. Access control panels and test sequences on-premises or on any mobile device (laptop, phone, tablet) via secure client access.

- Full control and measurement capability
- Program settings and measurement read back including digital scope and harmonics data
- Extensive safety protection settings
- Waveform selection, preview and edit modes
- Execution of user's custom test sequences
- Transient data entry and execution screen using a spreadsheet layout

Built-in Galvanic Isolation Reduces Safety Risks

RGS provides facility-to-output and phase-to-phase/channel-to-channel galvanic isolation, ensuring no electrical connection between channels. Each phase can operate as an independent source with full voltage and frequency control. This fully isolated design improves operator safety, prevents ground loops and UUT damage, and eliminates the need for external transformers - reducing system cost and footprint.

Modular & Scalable Power up to 1.296MW

Easily parallel multiple chassis to reach up to 216kW with 432Amps / phase per cabinet. Parallel cabinets up to 432kW. Three-Phase High Power System configurations available up to 1.296MW using a three-phase central controller.

- Easy configuration, flexible set up and reduced downtime
- Scalable power - expand now or later
- Mix different power ratings in parallel systems
- Cost-effective auxiliary no-controller models available
- Integrated 19" Rack systems offered in 18U, 32U, 42U cabinets.
- **Parallel configuration kits available** for custom cabinet integration.

NOTE: Cabinet sizes vary in EU, UK, India, China. Contact Global Sales Centers for more information



Parallel Systems Installed in 19" Rack Cabinet

Models	Rated Power ¹ AC / DC mode	Voltage Ranges ² Vac L-N / Vdc	Max. AC/DC Current per phase in 3 & 2 Phase Mode ³	Rack Space
3300RGS-4UC	30 kVA, kW / 30 kW	0-350 Vac / ± 0-500 Vdc	96.0 Arms / 42.0 Adc	18U
3360RGS-4UC	36 kVA, kW / 36 kW	0-350 Vac / ± 0-500 Vdc	96.0 Arms / 42.0 Adc	18U
3481RGS-4UC	48 kVA, kW / 48 kW	0-350 Vac / ± 0-500 Vdc	96.0 Arms / 42.0 Adc	18U
3630RGS-4UC	63 kVA, kW / 63 kW	0-350 Vac / ± 0-500 Vdc	144.0 Arms / 63.0 Adc	18U
3721RGS-4UC	72 kVA, kW / 72 kW	0-350 Vac / ± 0-500 Vdc	144.0 Arms / 63.0 Adc	18U
3961RGS-4UC	96 kVA, kW / 96 kW	0-350 Vac / ± 0-500 Vdc	192.0 Arms / 84.0 Adc	32U
31050RGS-4UC	105 kVA, kW / 105 kW	0-350 Vac / ± 0-500 Vdc	240.0 Arms / 105.0 Adc	32U
31201RGS-4UC	120 kVA, kW / 120 kW	0-350 Vac / ± 0-500 Vdc	240.0 Arms / 105.0 Adc	32U
31441RGS-4UC	144 kVA, kW / 144 kW	0-350 Vac / ± 0-500 Vdc	288.0 Arms / 126.0 Adc	32U
31681RGS-4UC	168 kVA, kW / 168 kW	0-350 Vac / ± 0-500 Vdc	336.0 Arms / 147.0 Adc	42U
31921RGS-4UC	192 kVA, kW / 192 kW	0-350 Vac / ± 0-500 Vdc	384.0 Arms / 168.0 Adc	42U
32161RGS-4UC	216 kVA, kW / 216 kW	0-350 Vac / ± 0-500 Vdc	432.0 Arms / 189.0 Adc	42U

Note 1: For Split Phase mode, rated power is 2/3.

Note 2: For Voltage ranges above 350Vac some frequency and Vthd restrictions apply.

Note 3: RMS current up to 48A per phase per module (45Hz to 200Hz); Above 200Hz max current derates with Option F.

Additional Information:

- Paralled systems up to 432kVA/kW.
- Three-Phase high power system configurations available up to 1.296 MVA/MW; Contact Factory for details.
- Legacy model numbers are still available for ordering.

Technical Specifications

Model	3120RGS-4UC	3150RGS-4UC	3180RGS-4UC	3210RGS-4UC	3241RGS-4UC
Modes of Operation: Regenerative Grid Simulator, Regenerative DC Power Source. Regenerative Electronic Load optional.					
AC or DC Output					
Phase Modes (Form)	1, 2 or 3	1, 2 or 3	1, 2 or 3	1, 2 or 3	1, 2 or 3
Maximum Power (Total)	12 kW/kVA	15 kW/kVA	18 kW/kVA ¹	21 kW/kVA ¹	24 kW/kVA ¹
Per Phase / Channel	4 kW/kVA	5 kW/kVA	6 kW/kVA	7 kW/kVA	8 kW/kVA
DC Offset: < 20 mV Output Noise (DC – 300 kHz) < 150 mV rms					
Voltage					
Range ²	AC Range: 0 - 350 VLN / 0 - 606 VLL DC Range: 0 - ±500 VDC				
Resolution	0.01		Accuracy:	± 0.25% F.S	
Harmonic Distortion (R Load, , Vac > 120Vrms)	< 100 Hz < 0.3% 100 Hz to 500Hz < 0.5% 500 to 1000 Hz < 1.0% > 1000 Hz < 1.5%				
Line Regulation	< 0.1% for 10% Line Change				
Load Regulation	± 0.02% (CSC Mode)				
Phase Angle - Range (B, C)	0 - 359.9°		Resolution:	0.1°	
Maximum Current					
3 & 2 Phase modes AC / DC	34.0 ARMS / 16.7 ADC	48.0 ARMS / 21.0 ADC	48.0 ARMS / 21.0 ADC	48.0 ARMS / 21.0 ADC	48.0 ARMS / 21.0 ADC
1 Phase mode AC / DC	100.0 ARMS / 50.0 ADC	144.0 ARMS / 63.0ADC	144.0 ARMS / 63.0ADC	144.0 ARMS / 63.0ADC	144.0 ARMS / 63.0ADC
Current Crest Factor (AC)	3.0 : 1	2.5 : 1	2.5 : 1	2.5 : 1	2.5 : 1
Frequency					
Range: 15.00 – 200.0 Hz std or 15.00 - 1200Hz Option F ⁴			Resolution / Accuracy: 0.01 Hz / ± 0.01%		
AC Input					
Input Voltage Range / Freq	380Vac – 480Vac ± 10%, 4 Wire, L1, L2, L3 and PE / 47 - 63 Hz				
Nom. Phase Current @ 400Vac / 480Vac	21 Arms / 18 Arms	26 Arms / 22 Arms	31 Arms / 26 Arms	36 Arms / 30 Arms	42 Arms / 35 Arms
Input Power Factor	0.99		Efficiency:	90%+	
Measurement					
Vrms Range / Accuracy	0 – 350 VLN / 0-606 VLL / ± 0.25% F.S.				
Irms Range ³ / Accuracy	50.0 A / ± 0.5% F.S.	50.0 A / ± 0.5% F.S.	50.0 A / ± 0.5% F.S.	50.0 A / ± 0.5% F.S.	50.0 A / ± 0.5% F.S.
Power Range ³ / Accuracy	4 kW / ± 1.5 % F.S.	5 kW / ± 1.5 % F.S.	6 kW / ± 1.5 % F.S.	7 kW / ± 1.5 % F.S.	8 kW / ± 1.5 % F.S
Scope Function	Sample Rate: 54932.47 Hz / Window: 1024 Samples / Bandwidth: 1200 Hz				
Transient Functions					
Programming: 200 Steps / 400 Segments, LIST, PULSE & STEP Modes, Frequency, Volt AC, Volt DC, Waveform, Ramp Time, Dwell Time. Time range: 0.1 - 10000000.0 ms, Time resolution 0.1 ms					
Execution: Run from step # to step #, Run, Step, Restart, Stop Program Storage: Non-volatile, 100 Programs + Transients					

Note 1: Maximum Power rating is reduced below 40Hz on 3180RGS, 3210RGS and 3241RGS models

Note 2: Extended Voltage Range: 0 - 365 VLN / 0 - 632 VLL, with VTHD < 1.0% @ 50~60Hz

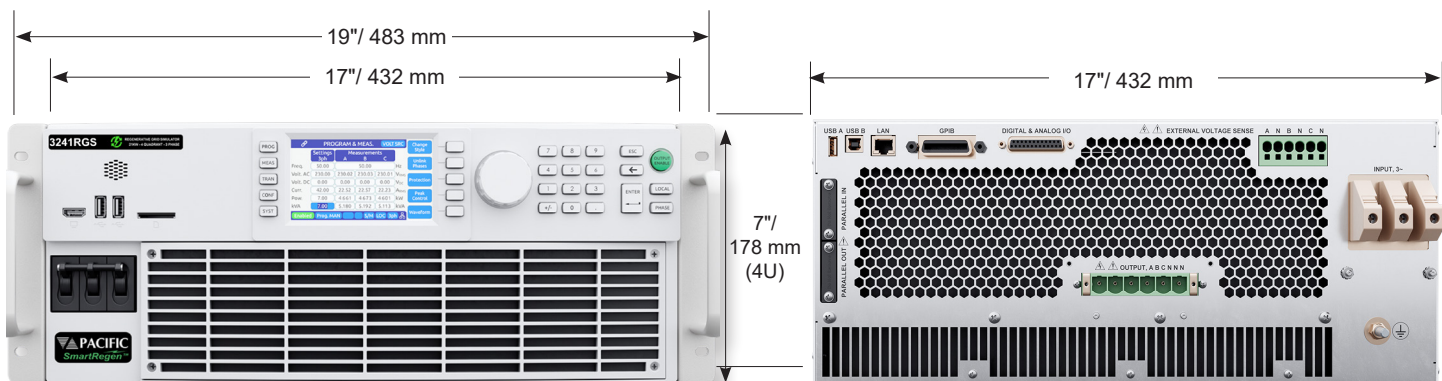
Note 3: Measurement range is times three in single phase mode.

Note 4: RMS current up to 48A per phase per module (45Hz to 200Hz); Above 200Hz max current derates with Option F.

Technical Specifications

Parameters		Specifications	
Remote Control Interfaces / Analog & Digital I/O			
LAN, GPIB, RS232, USB, ModBus TCP(Standard); CAN or CAN-FD (Optional)			
Analog Inputs (4)/Outputs(4)	AI1, AI2, AI3, A14 User defined functions.	AO1 AO2, AO3, AO4 User-defined measurement unctions	
Digital Inputs (6)/Outputs(6)	Remote, Inhibit, Trans. Trig., Phase Sync, User	Output Relay, Transient, Function Strobe, Sync	
Environmental			
Cooling: Variable speed fan, front intake, rear exhaust; Energy Saving Modes: Standby & Sleep			
Temperature	Operating: 0 to 40 °C / 32 to 104 °F	Storage: -20 to 70 °C/-4 to 158 °F	
Humidity	< 80%, non-condensing	Altitude:	2000 m / 6500 feet
System Features			
USB Ports: 2 on Front Panel, 1 on Rear Panel, All Type A		SD Card: 32 GB max. Capacity	
Video Output Port	Monitor Out, Front Panel		
Dimensions & Weights			
Chassis Size H x W x D	7.0"x17.0"x25.0" / 178x432x635 mm		Shipping: 20" x 27" x 38" / 508 x 686 x 965 mm
Weight Per 4U Height Unit	Net:	111.2 lbs. / 50.4 kg	Shipping: 151 lbs / 68.5 kg
Regulatory Compliance			
Safety	IEC 61010-1:2010 (Edition 3)		
EMC - Emissions / Immunity	EN 55011:2009+A1:2010 / EN 61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8 and EN 61000-4 -11		
Product Category	EN 61326-1:2013 (Measurement, Laboratory and Control Equipment)		
Agency Approvals	CE Mark	RoHS (2011/65/EU):	EN50581:2012

Unit Dimensions



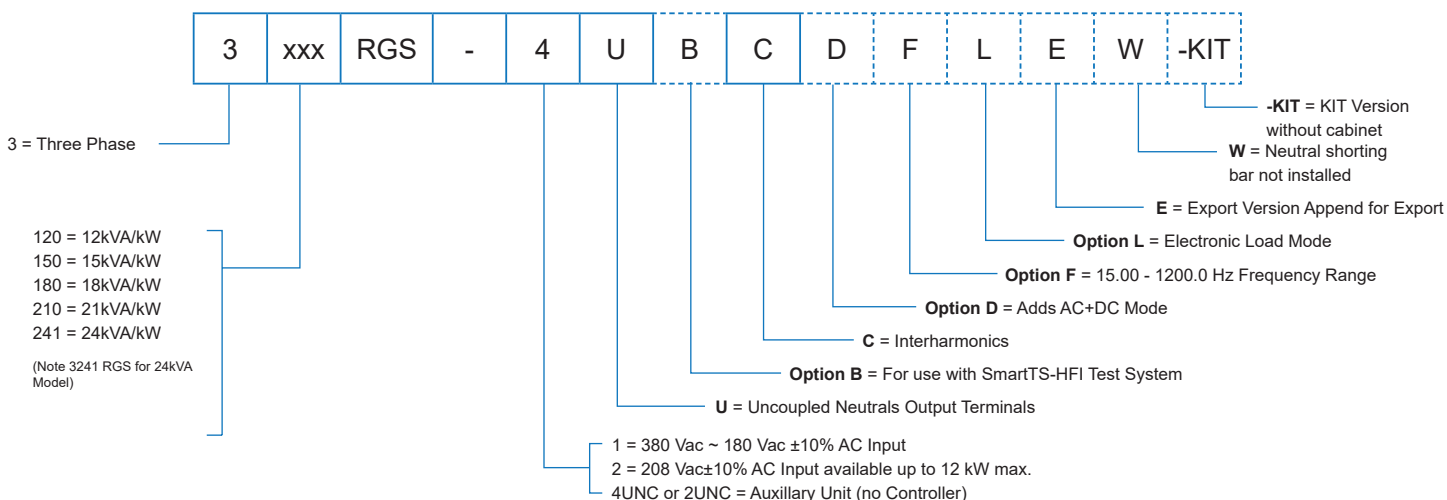
The RGS is designed for bench top or 19" equipment rack operation.

The Rear Panel provides connections for AC Input, External Sense, Aux I/O and remote control interfaces.

Ordering Information

RGS Series Model Number Encoder

Note: Solid outlined fields must be specified. Dashed outlined fields are optional



NOTE: 4U indicates that the shorting bar for output neutrals will be installed on the units by default. If Option W is selected, the units will be shipped with shorting bar for neutrals removed and provided in the ship kit instead.

Order Example: 3241RGS-4UCL

- Bench Model, 24 kVA, 3-Phase, Regenerative Grid Simulator with Load option, USB, RS232, LAN, GPIB & AUX I/O
- Auxiliary Models (No controller)
Order Example: 3241RGS-4UNC

Typical Delivery Items

- Power Source
- Rack Mount Handles
- Certificate of Compliance

Available Accessories

- Output shorting adapter for single phase output mode use. P/N 160086 (not for W)
- Paralleling Cable, 1 Ft. (Included with Aux NC models). P/N 778036
- Rack slides. P/N 703251

Pre-Written Test Sequence Options

Test Sequence Options require use of built-in SmartSource Suite via LAN or USB.

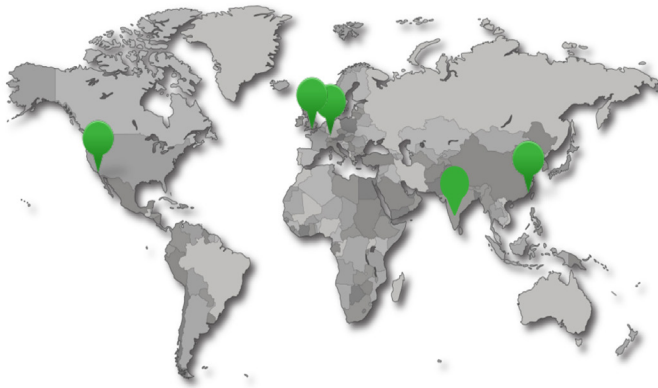
- IEC Test Suite - IEC 61000-4-11p, IEC 61000-4-14, IEC 61000-4-17, IEC 61000-4-27p, IEC 61000-4-28, IEC 61000-4-29p and IEC 61000-4-34
- IEC 61000-4-13 Standard
- IEEE 1547.1-2020
- Semi-F47-0706
- KS C 9610-4-11, KS C 9610-4-29
- MIL-STD 1275 Rev E
- EN62116



Innovate the Way You Test

by making it simpler, safer,
more productive, and
sustainable.

Global Sales & Service Centers



The Power of Expertise

About Pacific Power Source

Founded in 1971, Pacific Power Source is an industry leading manufacturer of AC and DC power test solutions. Our reputation as a market and technology leader stems from our best-in-class products, commitment to R&D investments, and exceptional worldwide customer support.

Pacific Power Source is a PPST Solutions Company.

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