



G5.SAS Solar Array Simulator Series

The G5.SAS series are unidirectional sources. It was developed specifically for testing inverters and simulating solar arrays and is suitable for use in laboratories and on test benches. The modular and finely graded G5.SAS series is characterized by highly dynamic response times and a wide current-voltage range with an auto-ranging factor 3. The power supplies feature especially low capacitance values in the output filter stage and switchable earth leakage resistors for adaptation to the insulation measurement of the DUT. The G5.SAS series is equipped with the powerful application software SASControl, which offers comfortable possibilities for the calculation of solar arrays. I-V curves are calculated with high accuracy in real time. REGATRON PV simulators: The market leader since 2005!

Device Types

Voltage V	Power kW	Current A	Height U	Order Code
0...500	9	0...54	4	G5.SAS.9.500.54
0...500	18	0...108	4	G5.SAS.18.500.108
0...500	27	0...162	7	G5.SAS.27.500.162
0...500	36	0...216	7	G5.SAS.36.500.216
0...500	45	0...270	10	G5.SAS.45.500.270
0...500	54	0...324	10	G5.SAS.54.500.324
0...1000	18	0...54	4	G5.SAS.18.1000.54
0...1000	36	0...108	7	G5.SAS.36.1000.108
0...1000	54	0...162	10	G5.SAS.54.1000.162
0...1500	27	0...54	7	G5.SAS.27.1500.54
0...1500	54	0...108	10	G5.SAS.54.1500.108

Modular and Easily Scalable Systems

The output of an individual power supply is in the range from 0...9 kW to 0...2000+ kW, up to 3000 VDC. The advantageous modularity of REGATRON power supply solutions allows the system to be easily adapted to ever-changing test requirements.

It is possible to reconfigure between parallel, series, and mixed operation. Moreover, the system can be expanded with additional power supply units or may be split into smaller units.

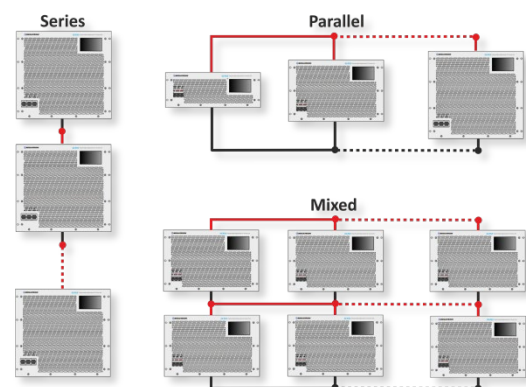


Figure 1: Modular concept for easy power and voltage increase by parallel, series, and mixed operation. The parallel configuration allows even an operation of different power levels, e.g., 18, 36, and 54 kW modules, in one system.

Whether for single devices or powerful multi-device multi-unit systems, REGATRON also offers turn-key cabinet solutions or project-specific system integration according to customer specifications.

Therefore, the purchase of a REGATRON power supply is a solid investment for the future.

Solar Array Simulation Features

The G5.SAS series features especially low capacitance values in the output filter stage, switchable earth leakage resistors, and the versatile application software SASControl. The powerful platform for R+D and testing of PV inverters fully complies with the efficiency measurement procedures for maximum power point tracking (MPPT) in inverters as described in EN 50530. The core of the application software SASControl is a versatile script programming system that allows the easy implementation of individual programming sequences. Report generation of measured data is also included. Rely on our many years of experience: REGATRON PV simulators have been market leaders since 2005!

Features such as adjustable controller settings and the integrated powerful 8-channel digital scope assist the user to quickly and easily achieve optimal system behavior for a special application requirement. The G5.SAS series also offers the possibility to store, edit, and recall any device configuration on board the power supply.

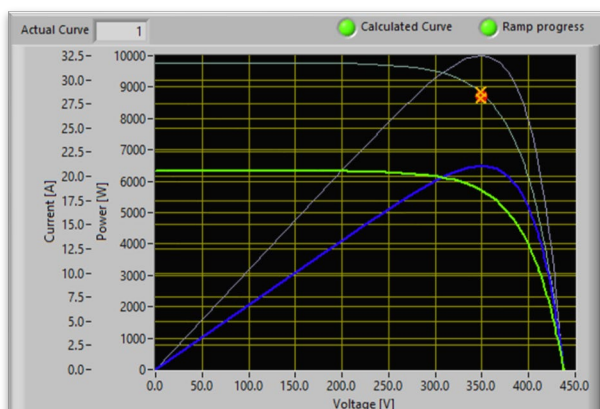


Figure 2: SASControl Live Viewer – always up to date.

General Dynamic Data

rise time	voltage 0...90%	150...220 μ s
set-value step	current 0...90%	35...70 μ s
response time	CV, recovery within	50...290 μ s
load step	0.5% set value	

Accuracy

The G5.SAS series has an exceptional voltage accuracy of 0.01...0.02% FS. The current accuracy is in the range of 0.03% FS depending on the model. There is even an additional high-resolution current measurement range from 0 to 10% FS with an accuracy of better than 0.003% FS.

Control Modes

CV	constant voltage
CC	constant current
CP	constant power
Ri	internal resistance simulation
Gi	internal conductance simulation in CC

Interfaces

Ethernet and USB

To connect with:

- G5.Control, the operating and maintenance software
- AAP, a variable-based function generator
- SASControl, the application software for PV simulation
- API .NET programming, e.g., by LabView, Python, Matlab
- WebAPI (REST) interface via the optional HMI or RCU

I/O port

The I/O interface features analog and digital signals used for set and actual values or operating states. Integrated into the user's control system it is possible to set dynamically changing limits, to use enable signals, or trigger in- or outputs. The possibility to activate up to 4 user-defined parameter sets using digital inputs means that the system can be adapted to different EUTs. For example, predefined digital fuses and voltage limits can be set.

Insulation Fault Prevention YCD

To avoid an unintentional insulation fault triggering of the PV inverter, the YCD interface of the G5.SAS power supply allows to adapt the earth leakage resistance.

Grid Connection

The wide-band AC input accepts all common AC grid systems and has an active power factor correction.

AC Grid	380...480 VAC $\pm$ 10% at 50/60 Hz
PF	0.99
Efficiency	95%

Options

Software and Control

Time-Based Function Generator

The TFE time-based function generator allows programming either through G5.Control operating software, HMI touch display.

- Time-dependent functions $U = f(t)$, $I = f(t)$, $P = f(t)$: sine, triangle, or square as well as user-defined data points. Import and export through CSV files supported
- Ramp function for amplitude and offset changes

Sweep functionality for TFE

As an add-on to the TFE time-based function generator, the sweep mode allows for continuous or stepwise sweeping of the amplitude and the frequency of a programmed function. Both the amplitude and the frequency may be swept linearly or exponentially.

HMI / RCU

The HMI built into the front panel allows comprehensive and convenient operation of the power supply via touch display or the WebAPI (REST) interface.

With the remote control unit (RCU) it is possible to control the device or system from a distant location in the same manner as with the HMI.

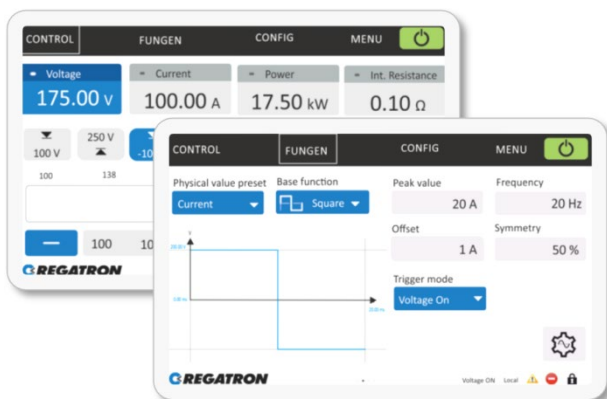


Figure 3: Intuitive control by HMI touch display. Everything you need at a glance.

User Safety

- Integrated safety relay (ISR) for increased emergency stop reliability supporting performance level PL c / PL e according to EN ISO 13849
- Discharge of AC filter (XCD), is mandatory when using the device with a plug connection. XCD ensures a discharge time of the AC filter <1 s required by EN 62477-1
- Various terminal protection covers

While a touch-proof DC cover for cabinet integration is included, for tabletop use also a touch-proof AC protection is required in accordance with standard EN 62477-1.

Voltage >	Power kW	DC-cover acc. contact	DC-cover touch-proof	AC-cover touch-proof	Tabletop use allowed	Order Code
500...1000	≤18	—	●	○	✓	G5.PAC.AC.1
500...1500	≥27	—	●	○	✓	G5.PAC.AC.2

● included

○ optional, mandatory for tabletop use

Environmental Conditions

- Front-panel-mounted air filter (AirFilter), recommended for use in dusty environments and with IP20 cabinets
- Higher degree of protection up to IP54 available on cabinet level
- Liquid cooling of the G5 devices at system level as shown in Figure 6. The Regatron solution allows to take the entire dissipated heat of the power supply out of the test bench and reuse it as process heat in the facility if possible

Rack-Integrated System Solutions

- Mobile rack solutions on castors up to 162 kW
- IP54 protection for air or liquid-cooled systems
- Third-party product integration and numerous safety options
- Easy reconfiguration between parallel, series, and mixed operation



Figure 4: REGATRON's rack-integrated turn-key system solutions, e.g., 72 kW (left) and 162 kW (right) power levels. Various types of AC/DC connectors and cables allow for comfortable handling. Third-party product integration and numerous safety options are additional features.



Figure 5: REGATRON's liquid-cooled system solutions up to IP54 with various power levels e.g. 54...162 kW (left) and 216...324 kW (right). The remote control unit RCU, indicator lights, emergency stop button, and main switch allow the user to operate the system on the enclosure's front door.

This product is developed, produced, and tested according to ISO 9001 by REGATRON.

For detailed technical information, contact REGATRON or your local sales partner.

Regatron AG
Feldmühlestrasse 50
9400 Rorschach
SWITZERLAND
sales@regatron.com
www.regatron.com

Regatron Inc.
100 Overlook Center, 2nd Floor
Princeton, NJ 08540
USA
inquiries@us.regatron.com
www.us.regatron.com

Important Features of the G5.SAS Series

Technology

- Technologically advanced, fast-switching, compact 19-inch power supplies
- High control dynamics in the 100...200 μ s range – even at higher power levels up to 2000+ kW
- Exceptional accuracy and an additional high-resolution current measurement range
- Wide current-voltage range with an auto-ranging factor 3
- CV, CC, CP, CR, and Ri/Gi-Sim control modes
- Highly efficient, resulting in a significant reduction of energy consumption and heat dissipation

System Control and Options

- Operating software, extended analysis, parameterization options, and calibration
- Application software with visualization, programming, and data logger
- Powerful application programming interfaces (APIs)

System Capability

- Modular and easily scalable systems
- Parallel, series, and mixed operation with a digital high-speed bus
- Simple multi-unit configuration with the operating software
- Easy rack mounting
- Liquid cooled systems in IP54 available
- Optional safety features such as 2-channel safety interface and insulation monitoring
- Turn-key cabinet solutions or project-specific system integration according to customer specification

All product specifications and information herein are provisional and subject to change without notice.

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Class: Public