

SOLID STATE MICROWAVE GENERATOR

200 W AT 2450 MHz

SAIREM's GMS 200 **solid state generator** provides continuous wave and pulse mode output (option). Its power is adjustable **from 0 to 200 W** at frequencies ranging between **2400 and 2500 MHz**.

Pinpoint Power, Pulse Length and Frequency control:

- Flexibility for your process
- Possibility to use a compact plasma source

This generator is designed **for scientific and industrial applications**, to be used with one or multiple MW applicators, to assure high reliability and small footprint. The protection against high reflected power and measurement of reflected power are performed via a built-in isolator.



MAIN APPLICATIONS

PLASMA APPLICATIONS

Plasma generation with compact plasma sources:

- **S-Wave** for atmospheric and low-pressure plasmas for radical creation, debacterization, ALD, medicine, etc....
- **Aura-Wave** and **Hi-Wave** for low pressure plasmas for large surface treatment

LABORATORY APPLICATIONS

- Microwave-assisted liquid or solid chemistry
- Biochemistry
- Drying
- Heating
- Etc...

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KEY BENEFITS

DESIGN

- One module: compact and lightweight
- Microwave energy **transmitted via coaxial cable** (to be ordered separately)
- Stable operation from 1 W & power adjustable in 1 W steps



TECHNOLOGY

- **Semiconductor technology:** no magnetron and therefore longer lifetime & no high voltage
- Very good frequency spectrum even at low power
- **Built-in internal protection** against mismatching and reflected power interlock
- **Built-in isolator** with automatic power reduction or switch off
- **True RMS detector** with linear measurement of reflected and forward power
- Very low ripple < 0.2 % RMS
- Adjustment of the microwave frequency: ± 50 MHz from the central frequency 2450 MHz
- **Scan function** allows running frequency sweep to find the optimum matching frequency. Up to two minima can be found and displayed on front panel. All measured data are then available through remote control and can be displayed on a PLC screen if necessary
- **SAIREM Auto-tune Algorithm¹:** allows to control the frequency automatically to minimize the reflected power

INTERNAL PULSE OPTION

- **Decrease of thermal impact** of plasmas thanks to pulse mode
- **Exotic chemical reactions** possible with short pulse width

CONTROLS

The generator is wholly **operated in local mode** from the control panel located at the front of the power supply rack.

The front panel consists of a graphical LCD screen, 3 push buttons and a knob for menu navigation and power control.

All operating parameters, control status, and possible fault, forward power and reflected power are displayed on the screen. The forward power set-point is pre-displayed before starting.

INTERNAL PULSE Version (GMS 200W IP)



¹ Patent WO/2012/146870

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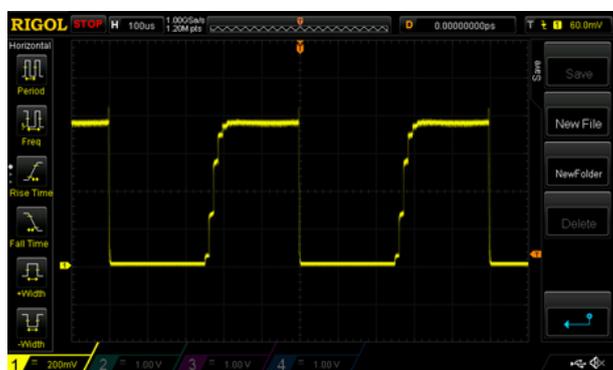
The internal pulse mode integrated with the IP generator can be set up from the digital control panel of the power supply unit; a remote control is available at the rear of the power supply unit via PROFIBUS®, CanOpen or Modbus (RS232 or RS485).

All operating pulse parameters are displayed on the screen as follows:

- Pulse maximum, minimum and average power level
- Pulse duty cycle and frequency
- Time ON/OFF



Set up of the pulse on the digital display



Corresponding microwave output measurement at 200W and 2kHz



Corresponding microwave output measurement at 200W and 4kHz

MAIN PULSE PARAMETERS

- Frequency: from 0.2 to 5000 Hz
- Duty cycle range:
 - 1 - 99% (0.2 Hz to 100 Hz)
 - 10% - 99% (101 to 1000 Hz)
 - 50% - 99% (1001 to 5000 Hz)
- Rise and fall time: < 50 μ s
- Minimum pulse duration: 100 μ s

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KEY SPECIFICATIONS

Reference	GMS200WSM / GMS200WIP (pulse option)
Presentation	<ul style="list-style-type: none">• Power supply with N connector output
Frequency	<ul style="list-style-type: none">• Central frequency: 2450 MHz Adjustable between 2400 and 2500 MHz
Frequency resolution	<ul style="list-style-type: none">• Frequency adjustable with 100 kHz step
Output power	<ul style="list-style-type: none">• 0 to 200 W (adjustable with 1 W steps)
Pulse capability (option)	<ul style="list-style-type: none">• Integrated square pulse generator (up to 5 kHz at 50% duty cycle) – adjustable duty cycle, frequency or TON TOFF mode.
Forward and reflected power measurement	<ul style="list-style-type: none">• Coupler with true RMS detector – linear measurement, linear analogue readout.
Ripple	<ul style="list-style-type: none">• < 0.2 % RMS
Reflected power	<ul style="list-style-type: none">• Adjustable from 1 W to 100 W• Possibility to control on reflected power limit
Protection	<ul style="list-style-type: none">• VSWR (built-in isolator with automatic power reduction), excess temperature (overheating interlock)
Microwave output	<ul style="list-style-type: none">• Coaxial cable N-type female plug, 50 Ohm (to be ordered separately)
Controls	<ul style="list-style-type: none">• Local: front panel• Remote (to be chosen): Modbus on RS232 ^(MS) or Analogue ^(ST) or Modbus RS485/RS422 ^(MM) or Profibus® ^(PB) or CANOpen ^(CA). To be specified when ordering• Analogue input set point for forward power control, analogue output for forward and reflected power as a standard on M12 connector.
Screen	<ul style="list-style-type: none">• White over blue graphical LCD screen of 240 x 128 pixels
Mains	<ul style="list-style-type: none">• 1 phase, 110V to 230V +/-10% VAC, 50/60 Hz
Consumption	<ul style="list-style-type: none">• 690 VA max. at 200 W
Cooling	<ul style="list-style-type: none">• Air• Ambient operating temperature: 5°C to 35°C (41°F to 72°F)• Relative humidity below dew point
Weight	<ul style="list-style-type: none">• 11.8 kg
Complies with norms	<ul style="list-style-type: none">• Safety EN 61010-1: 2010 / EMC: EN 61326-1: 2013• A safety connector meets safety standard for machines and personnel

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MAIN DIMENSIONS

