

# SOLID STATE MICROWAVE GENERATOR

## Adjustable from 0 to 1 000 W

SAIREM's GMS1000 solid state generator provides continuous wave (CW) output power adjustable **from 0 to 1 000 W** at 2450 MHz. A minimal power of 900 W is guaranteed over the whole frequency range between 2400 and 2500 MHz.

### Pinpoint Power and Frequency control:

- Flexibility for your process
- Possibility to use a resonant cavity design

This generator is designed for **scientific and industrial applications**, use with monomode or multimode MW applicators.

**Protection against reflected power** up to 100 % all time, and measurement of reflected power via a built-in isolator.



## MAIN APPLICATIONS

### LABORATORY APPLICATIONS

- Microwave-assisted liquid or solid chemistry
- Biochemistry
- Drying
- Sintering
- Melting
- Etc...

### PLASMA APPLICATIONS

- Plasma generation with surface wave plasma source (Downstream, Surfaguide ...)

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### KEY BENEFITS

#### DESIGN

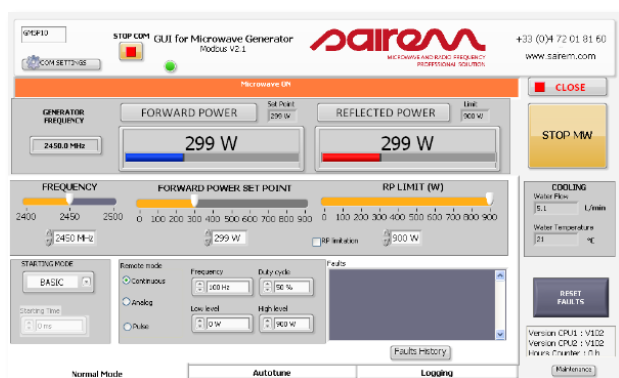
- **Power combiner** technology
- One compact and lightweight module
- Microwave energy **transmitted via waveguide**
- **Power adjustable** by 1 W step
- **Frequency adjustable** by 100 kHz step to optimize power transfer

#### TECHNOLOGY

- **Semiconductor technology:** no magnetron and therefore longer lifetime & no high voltage
- Excellent frequency spectrum even at low power
- **Built-in internal protection** against mismatching and reflected power in any phase
- **Built-in isolator** with automatic power reduction or switch off
- **True RMS detector** with linear measurement of reflected and forward power
- Very low ripple < 1 % RMS
- Manual or **automatic microwave frequency adjustment**
- **SAIREM Auto-tune algorithm** (automatic load-tuning): controls the frequency automatically in order to minimize reflected power<sup>1</sup>



#### CONTROLS



- **LabVIEW™** software provided (no license requested) for all operating parameters and control status
- Alarm information, forward power and reflected power readings

<sup>1</sup> Patent WO/2012/146870

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### KEY SPECIFICATIONS

Reference	• <b>GMS1000SM56MPFCXMS3IRVFAIT</b>
Technology	• <b>Patented power combiner technology<sup>2</sup></b>
Frequency	• 2450 MHz central frequency, adjustable in full 2.4–2.5 GHz ISM band • 100 kHz step increments between 2400 and 2500 MHz
Power output	• 2 operating modes: <ul style="list-style-type: none"><li>○ <b>0 to 1000 W</b> - Fixed frequency at 2450 MHz</li><li>○ <b>0 to 900 W</b> - Adjustable frequency between 2400 and 2500 MHz</li></ul>
Power measurement	• Precision $\pm 4\%$ at 2450 MHz, thermal stability $\pm 2\%$
Ripple	• Forward and reflected: internal coupler with true RMS detector – linear measurement • Analog output for forward and reflected power (0 to 10 V)
Reflected power (RP)	• $< 1\%$ RMS • 100 % RP accepted all time without any restriction • Set point for forward limitation or stop mode adjustable from 10W to 900W • Automatic frequency adjustment to reach minimum reflected power (to set automatically the exact resonant frequency of MW applicator)
Protection	• VSWR (WG isolator) • Sensors: air temperature, dew point conditions, , water temperature, water flow • DFM and ARC input • Interlock to ensure safety standard for machines and personnel
Microwave output	• WR340 waveguide rectangular flange
Controls	• Modbus RS232 or Ethernet or Profibus • Delivered with LabVIEW™ based HMI to control by a PC • Adjustable with 1 W step • Analog input available (0 to 10 V - 0 to 1000 W)
Mains	• 1 phase - 208V to 240VAC - 2500 W max - 50/60 Hz - C20 appliance inlet
Cooling & operation requirements	• Operating temperature: 15 to 40 °C (41 to 113 °F) • Cooling tubes: quick coupling, 10/8 calibrated tubes • Cooling water flow: 4 l/min (0,26 gal/min) minimum • Cooling water temperature: 16 to 25 °C (63 to 77 °F)
Weight	• 25.0 kg
Conformity	• EN 61326-1 (EMC), EN 61010-1 (safety), CE Marked

<sup>2</sup> Patent pending FR 1854315

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### MAIN DIMENSIONS

