

# SOLID STATE MICROWAVE GENERATOR

## 900 W @ 2400 - 2500 MHz Ref. GMSP10



SAIREM's GMSP solid state generators provide continuous wave (CW) output power adjustable from 0 to 900 W at frequencies ranging between **2400 MHz** and **2500 MHz**.

This generator is designed for scientific and industrial applications, to be used with monomode or multimode MW applicators, output on waveguide, monochromatic (frequency synthesizer) suitable for high Q factor, high reliability, LabVIEW™ control, water cooled and small footprint. The protection against reflected power up to 100 % and measurement of reflected power are performed via an internal isolator.

Advantages of the solid state generator vs magnetron generator:

- Compact size & light weight, one box, microwave energy transmitted via waveguide.
- Stable operation from microwave power levels from 1 W to 900 W & power adjustable by 1 W step.
- 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 100 % reflected power 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.
- Adjustment of the microwave frequency:  $\pm 50$  MHz from the central frequency 2450 MHz, 0.1 MHz increment, manually or automatically.
- Sairem Auto-tune algorithm (Automatic load-tuning) which allows to control the frequency automatically in order to minimize the reflected power (Patent WO 2012/146870).
- All operating parameters and control status, as well as any possible alarm, forward power and reflected power are displayed on LabVIEW™ software.

## TECHNICAL SPECIFICATIONS

<b>REF</b>	<b>GMSP10KSM56MPFCXMS3IRVFAIT</b>
<b>Presentation</b>	One cabinet with WR340 waveguide output
<b>Frequency</b>	2450 MHz central frequency, adjustable in full 2.4–2.5 GHz ISM band
<b>Frequency resolution</b>	100 kHz step increment, between 2400 and 2500 MHz, single or sweep frequency.
<b>Frequency stability</b>	Stability: +/- 1 ppm, absolute frequency accuracy: +/- 3 ppm
<b>Output power</b>	0 to 900 W (adjustable with 1 W step), precision $\pm 1 \%$ , thermal stability $\pm 3 \%$
<b>Ripple</b>	< 1 % RMS
<b>Pulse capability (optional)</b>	Integrated square pulse generator (up to 1 kHz at 50% duty cycle) – adjustable duty cycle, frequency or T <sub>ON</sub> T <sub>OFF</sub> mode. Pulse control by external analogue signal
<b>Power measurement</b>	Forward and reflected: internal coupler with true RMS detector – linear measurement
<b>Reflected power (RP) level</b>	100 % RP accepted all time without any restriction. Set point for forward limitation or stop mode adjustable from 10 W to 900 W. Automatic frequency adjustment to reach minimum reflected power (to set automatically the exact resonant frequency of MW applicator; Patent WO 2012/146870)
<b>Protection</b>	VSWR (WG isolator), water flow, water temperature, air temperature, over temperature or due point conditions, external interlock...
<b>Microwave output</b>	WR340 waveguide rectangular flange.
<b>Control</b>	Modbus RS232 / Delivered with LabVIEW™ based HMI to control by a laptop. Power set point resolution: 1 Watt Analogue input set point for forward power control, analogue output for forward and reflected power
<b>Mains</b>	1 phase, 208V to 240VAC, 2500 W, 50/60 Hz EN 61326-1, 61010-1,CE
<b>Cooling &amp; operation requirements</b>	Water cooled, water flow and water temperature sensors included. Operating temperature: 15 to 40 °C (41 °F to 113 °F). Water temperature for cooling: 16 °C to 25 °C (63 °F to 77 °F) 4l/min. Ambient humidity level < 50% (no due point conditions).
<b>Weight</b>	25 kg
<b>Security</b>	A safety connector ensures safety standard for machines and personal



