

High-Power Solid-State Generator STPG 2450

General Description

STPG 2450 (Fig. 1) is a compact modular high-power synthesized solid-state generator operating in 2.45 GHz ISM frequency range. Depending on the number and type of internal power amplifier (PA) modules, the generator provides maximal CW output power $P_{\max} = 200$ W (model STPG 2450-200), $P_{\max} = 400$ W (model STPG 2450-400), or $P_{\max} = 800$ W (model STPG 2450-800).



Fig. 1. High-power solid-state generator STPG 2450.

The generator frequency and output power can be set in fine steps either locally via LCD touchscreen, or remotely via RS232 or USB interface using SCPI language. A complimentary Windows-based control program is a part of the delivery.

The output (forward) power level is calibrated from 100 mW (20 dBm) to $P_{\max}/2$ in full frequency range. The power is precisely leveled in this range using a proprietary levelling loop. Actual forward and reverse power values are accurately measured using an internal bidirectional power meter.

STPG 2450 comprises the following components:

- Solid-state synthesizer with power levelling
- One or two solid-state power amplifier modules
- DC power supplies (one for each PA module)
- Power combiners
- Bidirectional power meter with leveling output
- Cooling water flowmeter
- Internal controller
- Touch panel LCD display
- Waveform generator

The generator is built in a standard 3U-height 19" cabinet with depth 434.5 mm. It is cooled by water, which substantially reduces its acoustic noise compared to air-cooling.

Reverse Power Protection

Each PA module is internally protected by a circulator so that the generator can handle full reflected power perpetually. This unique feature enables the generator to be used for instance for calibrations requiring totally reflecting impedance standards.

Specifications

Electrical	STPG 2450-200	STPG 2450-400	STPG 2450-800
Frequency range	2400 – 2500 MHz		
Frequency resolution	1 Hz		
Frequency switching time	max. 5 ms, typ. 2 ms		
Number of power amplifier (PA) modules	1	1	2
Max. output power P_{max} (CW, matched termination)	200 W	400 W	800 W
Power setting range ¹	100 mW – 200 W	100 mW – 400 W	100 mW – 800 W
Power setting step	0.01 dB (0.2 % of set power)		
Power measurement accuracy	± 0.4 dB (± 9.5 %)		
Power levelling accuracy	± 0.2 dB (± 4.5 %)		
Output impedance	50 Ω		
Output RF connector	7-16 female		
Output protection	Circulator in each PA module		
Max. load VSWR	Unlimited		
AC power supply	100 – 300 VAC, 40 – 60 Hz, 1-phase		
AC input power	600 VA	1400 VA	2000 VA
Remote control interface	USB, RS232		
Remote control language	SCPI		
Mechanical	STPG 2450-200	STPG 2450-400	STPG 2450-800
Width	483 mm		
Height	140 mm		
Depth	435 mm		
Mass	13 kg	17 kg	19 kg
Other	STPG 2450-200	STPG 2450-400	STPG 2450-800
Cooling water flow rate (minimum)	2 liters/minute		
Cooling water temperature ²	+15 to +25 °C		
Pressure drop at min water flow rate	< 5 kPa		
Maximum working pressure	500 kPa		
Water inlet/outlet connector ³	SMC KPH10-03		
Water hose	SMC TU 1065 Polyurethane		
Operating temperature range	+5 to +55 °C		
Storage temperature range	-10 to +125 °C		

Notes:

¹ In addition, the power can be completely switched off.

² Increase minimum cooling water temperature in condensing situations.

³ See e.g. www.smc.eu

Basic Dimensions

Note: All dimensions are in millimeters.

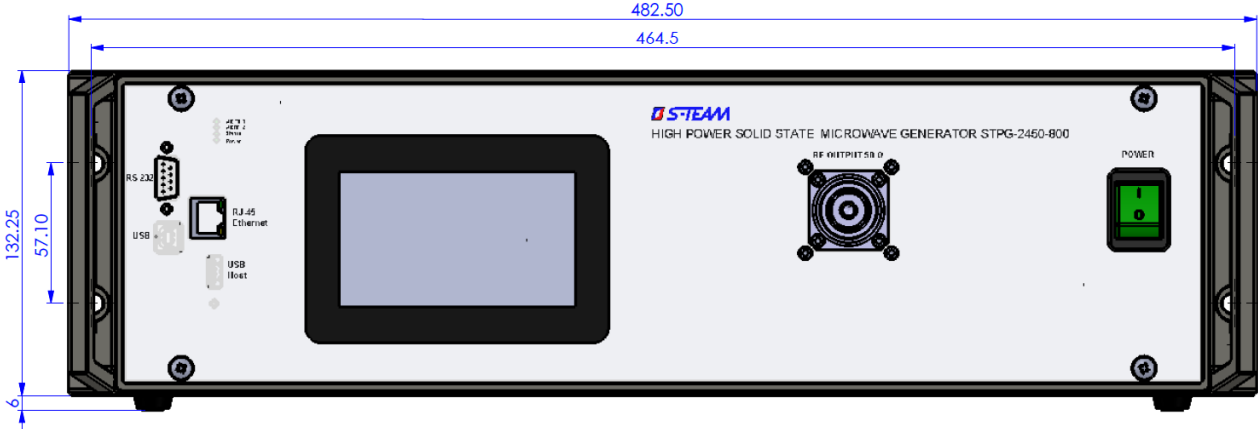


Fig. 2. Basic dimensions of solid-state generator STPG 2450 – front view.

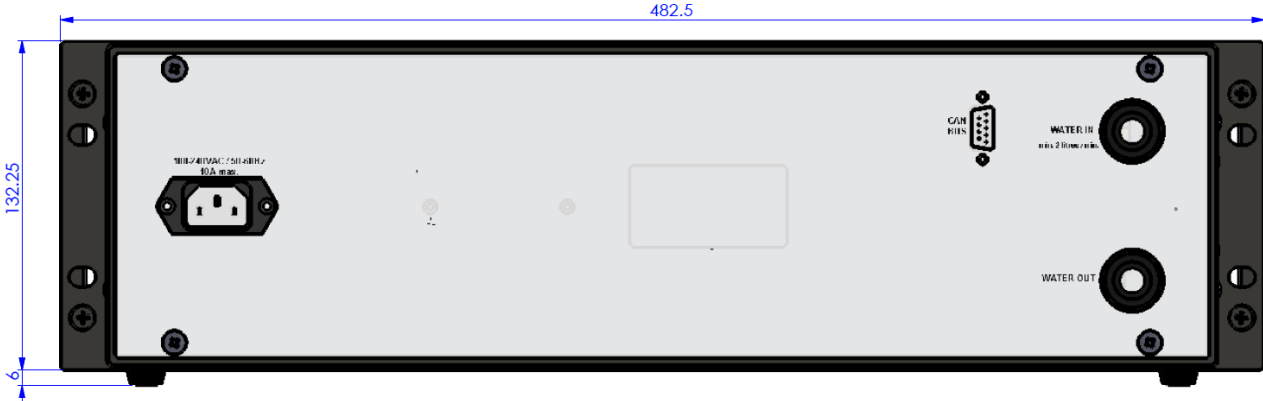


Fig. 3. Basic dimensions of solid-state generator STPG 2450 – rear view.

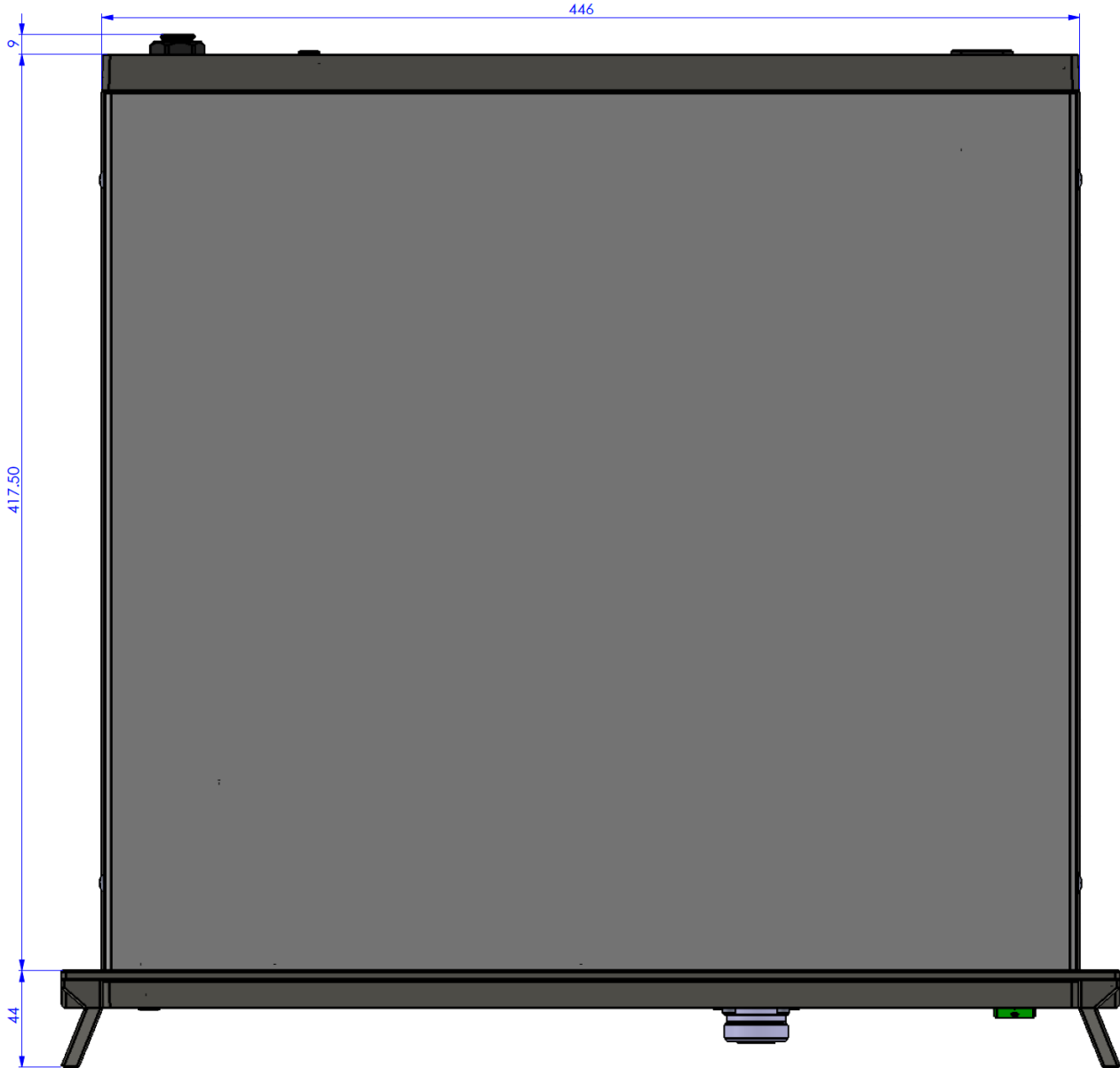


Fig. 4. Basic dimensions of solid-state generator STPG 2450 – top view.