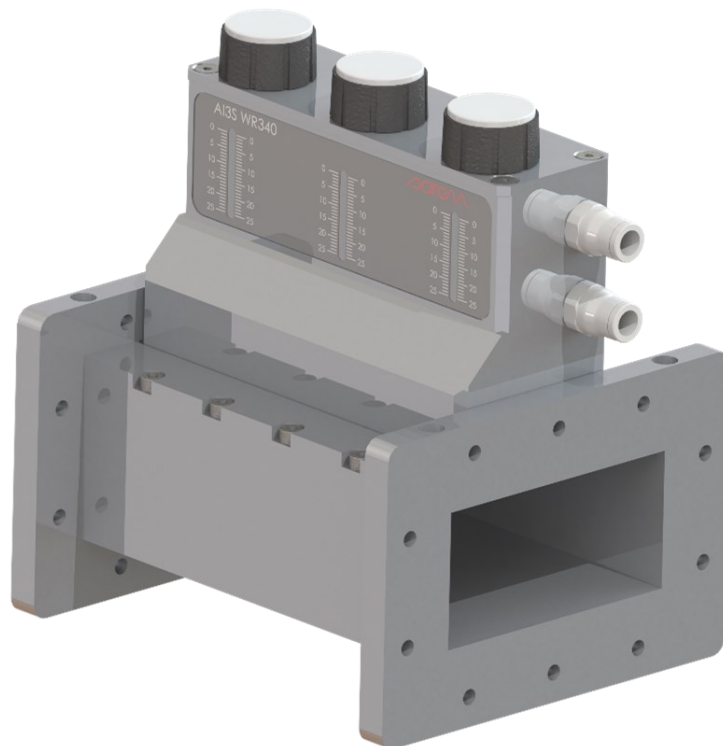


AI3S NEW GENERATION MANUAL 3 STUB TUNER

The new AI3S generation is more efficient and adapted to generators up to 10 kW.

This impedance tuner is designed to decrease the level of reflected power in a microwave installation. The AI3S is designed to operate in conjunction with our 6 or 10 kW microwave generators, even in case of high SWR. This tuner can be used with a monomode or multimode cavities.

Its special design makes a micrometric adjustment of the stubs with display possible.



MAIN APPLICATIONS

ALL APPLICATIONS

- Reduce the reflected power in all microwave setups

KEY BENEFITS

DESIGN

- More compact
- Can substitute previous version, without changing the layout, with adaptation kits
- Asymmetric stubs mounting for optimal ease of use
- Optimized water cooling, with no risk of contamination

TECHNOLOGY

- 100 % reflected power acceptance with 6kW generator
- Lower heating of the equipment than previous version
- In 0 position the impedance tuner is equivalent to a standard waveguide

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OPERATING INSTRUCTIONS

Operating instructions with SAIREM microwave generators. For non-Sairem generators refer to the manufacturer's low power level recommendations.

- Once the experimental set-up is ready and the load is present in the applicator, turn on the microwave generator and set the forward power (FP) to a low level, for example 200 W for generators up to 3 kW and 600 W for the 6 kW generator.
- Using a microwave leakage meter, for example SAIREM's IFP05C, make sure there is no microwave leakage along the system. Pay special attention to all connections via flanges & bolts. Do not worry if during this test the $FP = RP$. Take your time, the magnetron is protected by a high-quality isolator rated 13 kW (6.5 kW FP and 6.5 kW RP).
- Push the microwave START button and note the levels of the forward (FP) and reflected power (RP) on the LCD display of the power supply. If the RP level is higher than 0 W use the sliding short circuit to lower it. Moving the sliding short circuit forward (towards the applicator) or backwards will increase or decrease the level of RP. Try to find the minimum RP possible;
- Increase FP to the desired level. Note the RP value and try to minimize it. Stop and block the position of the sliding short circuit when the minimum RP level has been reached;
- If the $RP < 30\% FP$ and the sliding short circuit cannot lower it, start using the third stub of the 3-stub tuner (closest to the magnetron). Rotate it until the reflected power level is minimized. Do the same thing successively with the second stub alone, and with the first one alone. Identify the stub which has more influence on minimization between the first and the second stubs. Continue to minimize the reflected power by acting alternatively on this stub and the third one. If results are still unsatisfactory you can try to turn the position of the tuner in the microwave line at 180 degrees and start again.

SETUP EXEMPLE

2.45 GHz monomode set-up using surfaguide plasma source applicator



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KEY SPECIFICATIONS

Reference	• AI3SMWR340 NG
Frequency	• 2450 MHz \pm 50 MHz
Material	• Aluminium
Stub travel	• 25 mm, display on 25-turn fine tuning system
Power	• SWR ² (Standing Wave Ratio) accepted and matched depending on microwave power and water flow: <ul style="list-style-type: none">○ SWR accepted \leq 6 at 6 kW without water○ SWR accepted \leq 6 at 10 kW with 0.5 l/min
Output	• Impedance matching until SWR = 6 at 6 kW, until SWR = 5 at 10 kW
Cooling	• Flange UG 1712/U (guide RG 112/U - WR340)
Dimensions	• Water with ref2PE, 6 x 8 mm hose, min. 0.5 L/min above 6 kW, otherwise no need for water
Weight	• 177 x 160 x 138 cm (h x w x d)
	• 3.3 kg

² SWR or Standing wave ratio is a measure of impedance matching of loads to the characteristic impedance of a transmission line or waveguide.

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MAIN DIMENSIONS

