

AI4S NG

AUTOMATIC 4 STUBS TUNER

AI4S is an automatic impedance tuner, equipped with 4 tuning stubs, impedance sensors, and an electronic control system. All the components are integrated in a standard waveguide. As soon as the generator delivers microwaves, the **determinist auto tuner system** matches instantaneously the load and permanently maintains the reflected power at a low level.

The tuner is specially designed with an efficient water-cooling system for high power applications, up to 10 kW.

SAIREM's **exclusive determinist tuner** adapts impedance automatically and much faster than the successive approximation technology often used.



MAIN APPLICATIONS

PLASMA APPLICATIONS

- PECVD Lab grown diamonds
- Any plasma application, particularly when change in operating conditions is requested

KEY BENEFITS

DESIGN

- More compact than previous generation
- Can replace previous version

TECHNOLOGY

- Determinist auto tuner technology
- 100 % matching range up to ρ
- 100 % reflected power acceptance with 6 kW generator
- Less heating than previous version

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REMOTE CONTROL (option)

The AI4S automatic 4-stub tuner works in automatic mode if supplied with 24 V DC. The standard remote-control board is Modbus on RS232.

For additional manual control mode, for example to start at a specific stub position, several options are proposed:

1. Control using your own Labview program via Modbus on RS232 remote control (standard version)
2. Control using a PLC via PROFIBUS or CanOpen or Modbus Ethernet remote control
3. Control using SAIREM AI4S software which allows to switch between automatic and manual control of the impedance sensors at the click of a button. Another possibility is to record and export the position of sensors vs. time; for example, during change of operating condition.
4. Control using SAIREM CBA AI4S, consists of a 19 " 5 U control rack with integrated touch screen and 24 V DC power supply



Control of AI4S using SAIREM CBA AI4S



Control of AI4S using SAIREM AI4S software

AI4S NG

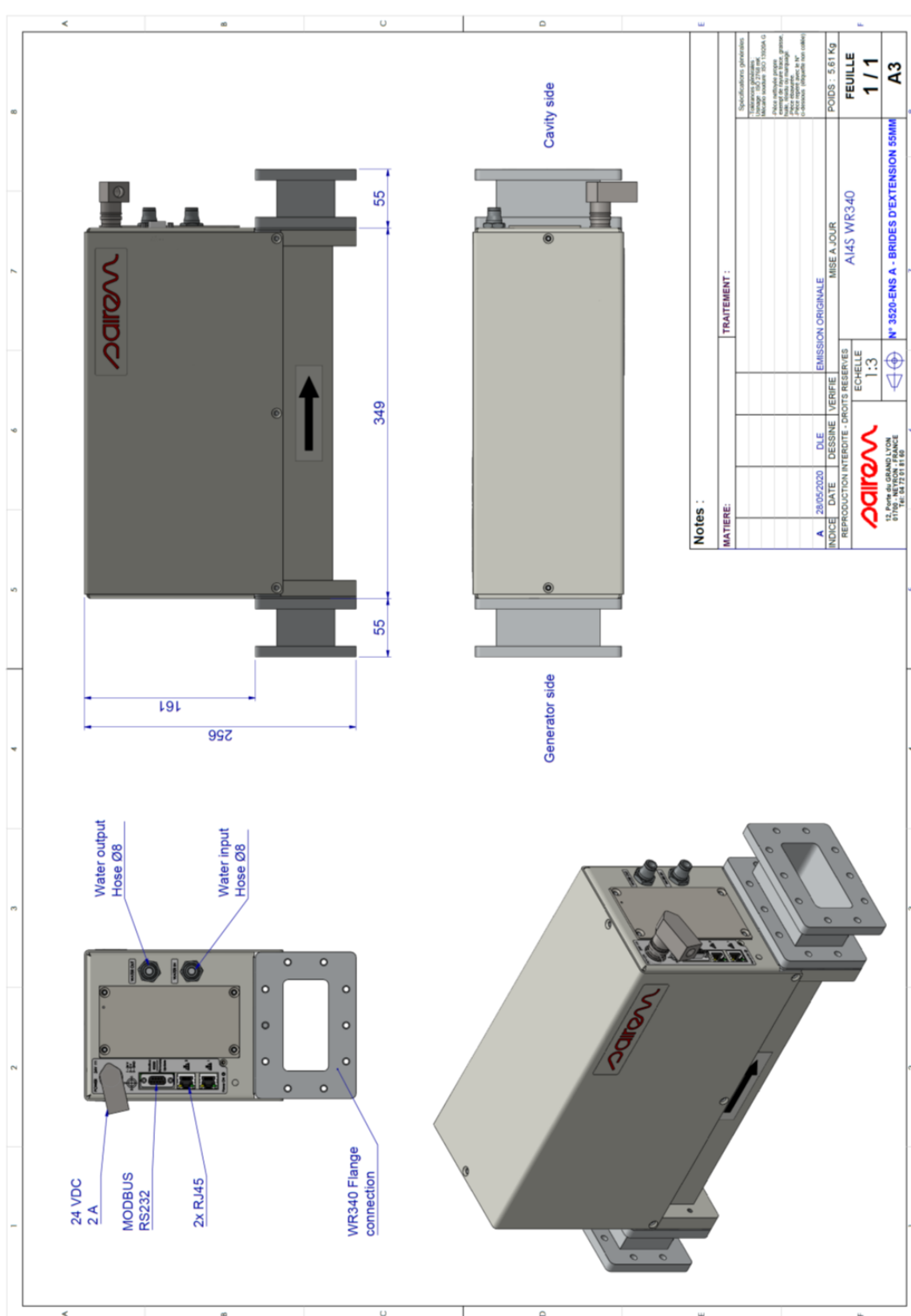
AUTOMATIC 4 STUBS TUNER

KEY SPECIFICATIONS

Reference	<ul style="list-style-type: none"> • AI4SAWR340 NG MS A
Description	<ul style="list-style-type: none"> • 2 pairs of 2-stub matching system, $\frac{1}{4}$ wavelength choke, integrated sensor consists of 4 diodes, X&Y remote giving the load impedance 'rho', manual or automatic control by the external connector
Frequency	<ul style="list-style-type: none"> • 2450 MHz \pm 25 MHz
Max. input power	<ul style="list-style-type: none"> • 10 kW microwave power
Calibration	<ul style="list-style-type: none"> • Calibration is realized at the factory according to the generator's power, from 200 W to 10 kW (power must be indicated on order)
Impedance self-adjustment	<ul style="list-style-type: none"> • VSWR 5 max any phase, any power
Response time	<ul style="list-style-type: none"> • Maximum 3 s from any position
Neutral position	<ul style="list-style-type: none"> • During 10 s after switch on 24 VDC, the AI4S gets into neutral position (no matching effect) • If switch off into these 10 seconds period, the AI4S stays in this neutral position
Voltage	<ul style="list-style-type: none"> • 24 VDC 1.5 A (the power supply is not provided except if the AI4S is purchased with a control rack)
Power supply (option)	<ul style="list-style-type: none"> • Power supply not provided except if the AI4S is purchased with control rack ref. CBA AI4S
Wave guide	<ul style="list-style-type: none"> • WR340
Material	<ul style="list-style-type: none"> • Waveguide in aluminum, stubs in copper
Cooling (L/min)	<ul style="list-style-type: none"> • Water needed in some conditions • Min water flow 0 L/min 1 L/min 2 L/min For a 6 kW TOS < 6 TOS < 8 TOS < 10 For a 10 kW TOS < 3 TOS < 6 TOS < 10 (TOS = VSWR)
Remote control	<ul style="list-style-type: none"> • In option
Dimensions (L x W x H)	<ul style="list-style-type: none"> • 349 x 135 x 256 mm • 55 mm length for extension
Weight	<ul style="list-style-type: none"> • 5.6 kg for AI4S NG • 4.5 kg for CBA AI4S

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MAIN DIMENSIONS



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