

Drop-in replacement for torches, vaporizers and bubblers

Wafer-to-wafer and across-wafer uniformity improved with the RASIRC Steamer

The **RASIRC Steamer** converts DI water into high flow, Ultra High Purity (UHP) water vapor.

Benefits

- **Purity**—Patent pending technology eliminates volatiles, ionic contaminants and other impurities, resulting in equal to or better purity than pyrolytic steam created by burning oxygen and hydrogen.
- **Yield**—Metals, hydrocarbons and particles are rejected by the non-porous membrane to deliver the purest steam possible.
- **Throughput**—Continuous unattended 24/7 operation. Up to 20% improvement in growth rate by elimination of carrier gases such as hydrogen and oxygen that can slow the growth rate. No thermal build up with increased flow rate as with pyrolytic torches.
- **Safety**—Eliminates H2 and O2 from the oxidation process, eliminating flammable and explosive materials. Operates at significantly lower temperature (below 115°C as opposed to above 500°C).
- **Cost of ownership**—Eliminates costly hydrogen and oxygen usage and storage. Low operating cost generates a rapid pay back and there is no cooling requirement unlike with torches.

Product Description

The **RASIRC Steamer** combines a clean steam generator and steam purification assembly into a single system. All wetted components in the liquid path are quartz or Teflon®. The purified steam path components are quartz and Teflon® fittings and valves. The **RASIRC Steamer** is proven to increase oxide growth rate, chamber uniformity, film quality, and reduce operating cost when compared against all other steam technologies.

The **RASIRC Steamer** uses a non-porous hydrophilic membrane that selectively allows water vapor to pass. Selectivity is significant with up to 1,000,000x relative to nitrogen molecules. In the vapor phase, the membrane selectively passes water molecules. All other molecules are greatly restricted, so contaminants in water such as dissolved gases, ions, TOCs, urea, particles, viruses, bacteria, pyrons, and metals can be removed in the steam phase.

Data is available to show reduction of 67 different metals to below detectable limits. Some contaminants have been verified to less than 0.0005 parts per billion. Urea, Nitrogen and CO2 can also be eliminated. Because the **RASIRC Steamer** works with water vapor at low pressures, stainless steel delivery systems can be replaced with quartz and fluoropolymer piping systems.



Product Specifications

Features

- 800 watts of clean steam
- Auto level / fill control
- Microcontroller
- Local and remote control
- Patent pending flow control of steam
- < 10 ppt for total metals; check with factory for other contaminants

Materials of Construction

- All wetted components in the liquid path are quartz or Teflon® fittings and valves
- 316L stainless steel pressure transducer upstream of steam purifier

Footprint

- W x H x D: 6" x 12" x 12" (152mm x 304mm x 304mm)

Purification Performance Results (ppb)			
	DI Water Source	Pre-Purified Steam	Purified Steam
Total Metals	19.8	0.15	0.009
Total Organic Carbon	1200	380	22
Total Silica	28	4.3	0.7
Urea	2200	48	2.6
Ammonium	1.468	1.117	0.116



www.rasirc.com

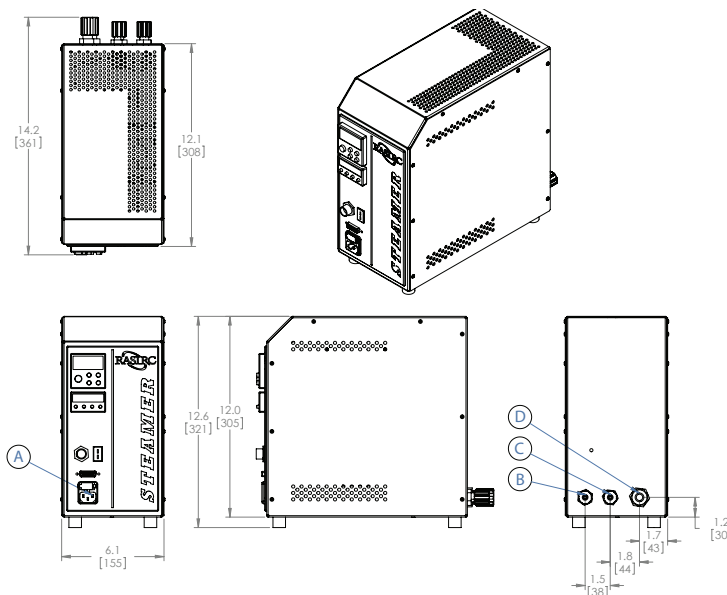
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Facility Requirements

The **RASIRC Steamer** requires the following environmental conditions:

- 20°-40° Celsius
- 30% to 90% humidity, non-condensing
- Class 1000 cleanroom or tool cabinet
- Protection of the unit from water leaks from surrounding process equipment

Rear Access is required to supply water, drain and delivery process steam.



How to Order

To place an order for the **RASIRC Steamer**, identify the model number from the chart below based on your Flow Rate and Electrical Requirements.

Model #	Min Flow Rate (slm)	Max Flow Rate (slm)	AMPs	Voltage	Water @ 15 psig ml/min
125A	1.25	10	10	115	25
125B	1.25	10	5	208	25

Connections

A	Electrical Service panel is on the left hand side. Power connection is in the front left lower corner
B	Vent / Drain for Water and Steam Condensate connection is 1/4" compression
C	DI Water connection is 1/4" compression
D	Steam Outlet connection is 1/2" male PFA flare

Add a dash and designator from the options below:

Designator	Option
V	Vacuum to Atmospheric Delivery. 316L stainless steel pressure transducer is located downstream of the steam purifier on the steam process line to monitor downstream pressure. This provides the ability to control flow into vacuum and atmospheric processes and makes flow independent of atmospheric pressure fluctuations.
A	Standard Atmospheric Delivery. The unit is designed to deliver to atmospheric process.
H	Auxillary heater controller for process delivery line.

For example, to order a unit with a Flow Rate Range from 1.25 slm to 10 slm that will be used in a 208VAC environment with standard atmospheric delivery, specify: 125B-A.

Additional optional components

- Silicon Rubber heater tape to prevent condensation of the steam in delivery lines.
- 1/4" FNPT or 3/8" male flare 3-way PFA pneumatic valves to control delivery between process tool and vent.
- Heater, TC and 3-way valve.

Orders can be placed through authorized dealers or directly with the factory.

About RASIRC

RASIRC develops products that purify and deliver ultra pure liquids and gases, with a primary focus on water vapor. RASIRC dryers, humidifiers and steam generators are of critical importance for many applications in the semiconductor, pharmaceutical, solar, biological, fuel cell, and power industries. Custom systems are available upon request. Call RASIRC to see how they can solve your water vapor challenges.



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