4 Semiconductor Manufacturing Process
CS-HEATER

A compact indirect in-line heater for chemicals—clean, safe and efficient.

The Compact in-line (Clean and Safe) CS-Heater quickly and accurately heats chemicals used for cleaning wafers and stripping resist in semiconductor manufacturing processes. Designed to heat up chemicals by high-power halogen lamps in high-grade quartz glass tubes through which the chemicals flow. This clean, safe operation leads to chemical contamination free, while assuring high-precision temperature control—advantages that will significantly improve the productivity of your manufacturing process.

AIC-7-12　　AIH-123QS

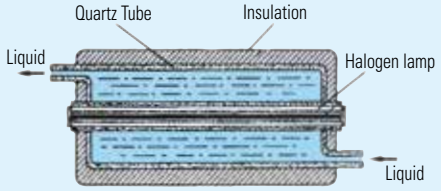
● Features

1. Contamination free
   Heating elements are housed in transparent,double-walled high-purity quartz glass tubes—halogen lamps radiate near-infrared rays to maintain a low temperature at the wetted surface. This configuration minimizes the dissolution of glass ingredients into the liquid, and if lamp parts break, fragments will not come into direct contact with the liquid, thereby preserving the integrity of the liquid.
2. Safety
   Optimum operational safety is provided through alarm systems in combination with a dedicated power control unit.
3. Compact
   Compact design allows the heater to be integrated into equipment such as wet stations.
4. High Heating Efficiency
   Heating efficiency of the CS-Heater is greater than 90%, allowing much-sought-after energy savings.
5. Easily Replaceable Heaters
   Halogen lamp heaters can be replaced from one side of the machine without disconnecting the tubes from the system.
6. Reliable Control and Operation
   PID control method provides precise temperature control. All operation and alarm indicators are located on the front panel of the controller for reliable manufacturing processing. Communication features are equipped as standard, allowing selection of a system configuration for specific applications.

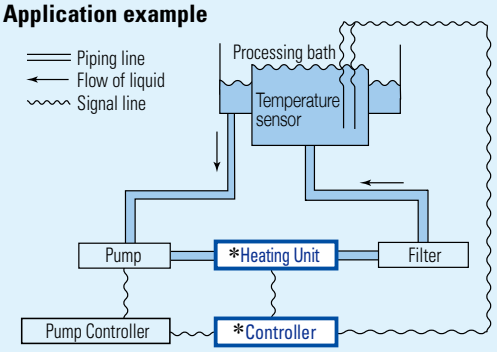
● Applications

1. Heating control of high temperature chemicals for LSI manufacturing processes.
   - Cleaning chemicals for pre-diffusing wafers(ammonia peroxide and hydrochloric acid peroxide)
   - Nitrogenized film remover (phosphoric acid)
   - Resist acid stripper (sulfuric acid peroxide)
2. Control the heating of various chemicals in other industries.
   - Gold-plating solutions, pre-treatment solutions, and cleaning liquids

■ Heating Construction



■ Application example



*Items marked with are the items in our responsible range.
*The piping system diagram is a typical example.

● Specifications

Model		AIH-33 Series	AIH-63 Series	AIH-93 Series	AIH-123 Series
	Controller	AIC-7-3	AIC-7-6	AIC-7-9	AIC-7-12
Heating method		Radiation heating by near infrared rays Direct circulation system with the processing bath through in-line piping			
Heater wattage		3kW	6kW	9kW	12kW
Temperture setting range		50℃ to 170℃ (varying depending on the condiions of the kind of chemicals, total heat capacity og the circulation system and heat balance of absorption/release)			
Temperture control accuracy		±0.3℃ (When the optimum PID value is set under given operating environmental conditions)			
Temperture control method		PID control (with soft start function)			
Temperture setting method		Setting by using the UP/DOWN keys			
Temperture indicator		Four-digit digital display in 0.1℃ increments			
Heater wattage		Halogen lamp indirect heating without direct contact with liquid			
Liquid-contacting material in heating unit		High-purity transparent quartz			
Pipe diameter (applicable fitting)		20mm (Quartz Fitting made by NIPPON PILLAR PACKING CO.,LTD) * Quartz Fitting is not included these products.			
Allowable liquid pressure of circulation system		0.5MPa (5kgf/cm²)			
Safety functions		14 self-diagnosis including overheating and leak detection Power off, alarm, error indication or signal output in case of error detection			
External communication function		RS-232C			
Overall dimension (mm) ※1 Weight	Heating unit	W150×D450×H165 Approx. 5.5kg	W190×D450×H200 Approx. 7.7kg	W210×D470×H220 Approx. 10.0kg	W250×D470×H260 Approx. 13.0kg
	Controller	W145×D235×H213 Approx. 5.2kg		W176×D275×H250 Approx. 7.2kg	
Power requirement (50/60Hz)		AC200/208V Single phase 16/17A	AC200/208V Single phase 32/33A	AC200/208V Single phase 48/49A	AC200/208V Single phase 64/65A

(Note) The CS-Heater has application restrictions for certain type chemicals such as HF, KOH and organic solutions and flow rate. Consult us before placing your order!

※1 Not including the dimensions of any projections.