

5 Semiconductor Manufacturing Process

DI-WATER HEATER

A hot water supply system for ultra-pure water that is ideally suited for point-of-use for rinsing of silicon wafers and glass substrates of liquid crystal displays.

DI-Water Heater heats purified water used to rinse silicon wafers in the manufacture of semiconductor and glass substrates in the manufacture of LCDs. The halogen lamps are housed in transparent, double-walled high-purity quartz glass tubes to ensure efficient and contaminant free heating of ultra-pure water. The slim, compact design minimizes foot point for installation at the point of use.

● Features

- Clean**
Heating vessels through which water-flows and all plumbing pipes are respectively made of high-purity quartz glass and fluorocarbon polymer.
- Compact**
Slim and compact unit requires minimal foot print for installation at the point of use.
- Excellent temperature control**
High power of halogen lamps quickly raise the temperature and adjust it in response to variations in the water flow rate.
- High Efficiency**
Efficiency with than 95%.
- Safety**
Optimum operational safety is provided through displays and sound alarms against abnormal conditions such as overheating, uncharged heating, excessive pressure and leakage of water.

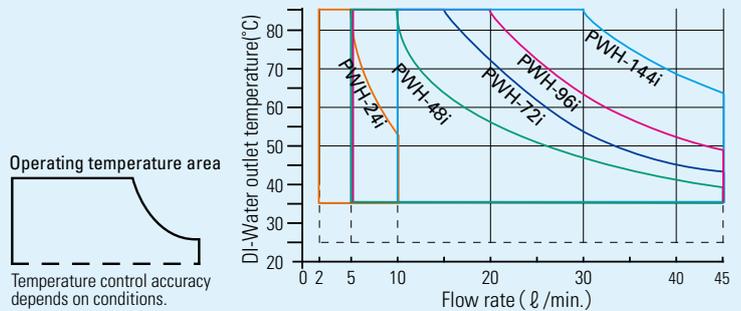
● Applications

- Heating of ultra-pure water for rinsing of silicon wafers and glass substrates of LCDs.
- Heating of pure water used in place of CFC for cleaning.



■ Heating Capability Diagram

(Conditions: At DI-Water inlet temperature of 20°C)



● Specifications

Model	PWH-24i	PWH-48i	PWH-72i	PWH-96i	PWH-144i
Heating method	Radiation heating with near infrared rays				
Heater wattage	24kW	48kW	72kW	96kW	144kW
Standard flow rate (at 55°C)	6 ℓ/min	12 ℓ/min	18 ℓ/min	24 ℓ/min	36 ℓ/min
Minimum heating flow rate	2 ℓ/min		5 ℓ/min		10 ℓ/min
Temperature setting range	25 to 85°C				
Temperature control accuracy	±1°C ※1				
Flow meter indication range	0 to 10 ℓ/min	0 to 50 ℓ/min. (Not the guaranteed range of temperature control accuracy)			
Allowable DI-Water pressure	0.4MPa (Relief pressure: 0.35MPa)				
Heater	Halogen lamp. Indirect heating without direct contact with water				
Heating vessels material	High-purity transparent quartz				
Wetted materials of the piping	Fluorocarbon polymer				
Safety functions	Flow rate error, overheating, no liquid operation, leakage sensor disconnection and lamp disconnection Power off, alarm, error indication or signal output in case of error detection				
External communication function	RS-232C/RS-485 (option) ※2				
External input/output function	8-input/14-output signal (Varies depending on specification)				
Overall dimensions (mm) ※3	W340×D850×H1384	W340×D850×H1384	W340×D850×H1584	W340×D850×H1986	W1050×D700×H2004
Weight	Approx. 140kg	Approx. 150kg	Approx. 160kg	Approx. 210kg	Approx. 410kg
Power requirement (50/60Hz)	AC200/208V 69/67A	AC200/208V 139/133A	AC200/208V 208/200A	AC200/208V 277/266A	AC200/208V 416/400A

※1 Varies depending on conditions ※2 Please contact us. ※3 3phase, 3wires