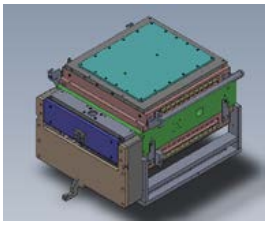
Rapid Thermal Process

ALLWIN21 CORP.

AccuThermo **AW820RV**



Top&Bottom Lamp Heating Chamber

Introduction

The AccuThermo AW820RV is a stand alone automatic Vacuum RTP (Rapid Thermal Processing) system, which uses high intensity visible radiation to heat single wafer for short process periods of time at precisely controlled temperatures. The process periods are typically 1-900 seconds in duration, although periods of up to 9999 seconds can be selected. These capabilities, combined with the heating chamber's cold-wall design and superior heating uniformity, provide significant advantages over conventional furnace processing.

AccuThermo AW 820RV Key Features

- Vacuum capability RTP/RTA/RTO/RTN system with Top and bottom High-intensity visible radiation Tungsten halogen lamp heating for fast heating rates with good repeatability performance and long lamp lifetime.
- Scattered IR light by special gold plated Al chamber surface. Allwin21
- advanced Software package with real time control technologies and many useful functions.
- Integrated solid robotic wafer transfer system
- Consistent wafer-to-wafer process cycle repeatability.
- Cooling N2 (Or CDA) flows around the lamps and quartz isolation tube for fast cooling rates
- Up to six gas lines with 5 MFCs and shut-off valves
- Energy efficient.
- Made in U.S.A.

Small footprint

46(D) X 39(W) X 70(H)

Typical Application Areas:

- Chip manufacture
- Compound industry: GaAs,GaN,GaP,GaINP,InP,SiC, III-V,II-VI
- Optronics, Planar optical waveguides, Lasers
- Nanotechnology
- Biomedical
- Battery
- MEMS
- Solar
- LED

Typical Applications (But not limited to)

- Silicon-dielectric growth
- Implant annealing
- Glass reflow
- Silicides formation and annealing
- Contact alloying
- Nitridation of metals
- Oxygen-donor annihilation
- Other heat treatment process

Double O Ring

Susceptor Load/Unload Station, 2 layer

Integrated Solid Robot

E-mail: sales@allwin21.com *Website: www.allwin21.com*

Rapid Thermal Process

ALLWIN21 CORP.

AccuThermo **AW820RV** Software Key Features

- Integrated process control system
- Real time graphics display
- Real time process data acquisition, display, and analysis
- Programmed comprehensive calibration and diagnostic functions
- Closed-loop temperature control with temperature sensing.
- Precise time-temperature profiles tailored to suit specific process requirements.
- Faster, easier Programmable comprehensive calibration of all subsystems, leading to enhanced process results.
- A recipe editor to create and edit recipes to fully automate the processing of wafers inside the AccuThermo RTP
- Validation of the recipe so improper control sequences will be revealed.
- Storage of multiple recipes, process data and calibration files so that process and calibration results can be maintained and compared over time.
- Passwords provide security for the system, recipe editing, diagnostics, calibration and setup functions.
- Simple and easy to use menu screen which allow a process cycle to be easily defined and executed.
- Troubleshooting feature which allows engineers and service personnel to activate individual subassemblies and functions. More I/O, AD/DA "exposure".
- Use **PowerSum** technology to detect the process and increase Yield.
- Watchdog function: If this board looses communication with the control software, it will shut down all processes and halt the system until communication is restored.
- GEM/SECS II function, EAP function.

AccuThermo **AW820RV** Specifications

- Wafer sizes: 4", 5", 6", 8" wafer capability
- Vacuum Pressure: 50mTorr to 13 Torr or 13 Torr to 760 Torr
- Recommended ramp up rate: Programmable, 10°C to 120°C per second. Maximum Rate: 200°C (NOT RECOMMENDED)
- Recommended steady state duration: 0-600 seconds per step.
- Ramp down rate: Non-programmable, 10°C to 200°C per second.
- Recommended steady state temperature range: 150°C - 1250°C.
- Special quick response K-Type TC temperature accuracy: ±1°C, when calibrated against an instrumented thermocouple wafer.
- Thermocouple temperature accuracy: ±0.5°C with rapid response.
- Temperature repeatability: ±0.5°C or better at 1150°C wafer-to-wafer. (Repetition specifications are based on a 100-wafer set.)
- Temperature uniformity: ±8°C across a 8" (200 mm) wafer at 1150°C. (This is a one sigma deviation 100 angstrom oxide.) For a titanium silicide process, no more than 6% increase in non-uniformity during the first anneal at 650°C to 700°C.
- Process/Purge gas inputs: Any inert and/or non-toxic gas regulated to 30 PSIG and pre-filtered to 1 micron. Typically, N2, O2), Ar, He, forming gas, NH3, N2O2 are used.

AccuThermo **AW820RV** Configuration

- AccuThermo AW820 Main Frame with wires.
- Power Type: Three Phase, worldwide power (50/60 Hz)
- Diamond H1 Integrated Solid Robot and Fixed cassette station
- Pentium® class computer with a 15-inch touch screen monitor and Allwin21 Corp proprietary software package.
- Mouse and standard keyboard.
- Aluminum oven chamber with water cooling passages.
- Chamber with feedthrough for shield TC
- Top and bottom quartz windows and heating module with 27 (1.5KW ea) Radiation lamps with 10 bank zones (Top: 2/3/4/ 3/ 2 ,Bottom:2/3/3/3/2).
- Oven control board and one main control board.
- Quartz Tray for 5 to 8 inch round wafer or customized.
- Two gas lines with one Gas MFC with shut-off valve.
- USB with original Software backup.
- Main Vacuum Valve

Options:

- Atmospheric process function.
- Vacuum pressure measurement and control function
- Turbo pump for up to 10-6 Torr
- Mechanical vacuum pump*
- Dry vacuum pump*
- Multiple Process Gases and MFCs (Up to 5) with Gas Control Board if necessary.
- High Temperature TC for up to 1500°C
- Susceptor for transparent substrate and substrate with metal thin film on top.
- Omega Meter Thermocouple calibration
- Shutt-off valve for Quartz Tube&Lamps cooling control
- Spare Parts
- SMIF Port

Allwin21 Corp.
Address: 220 Cochrane Circle, Morgan Hill,CA95037, U.S.A.
Tel.: +1-408-778-7788 Fax: +1-408-904-7168
Email: sales@allwin21.com