# Table-Top Vacuum Solder Reflow Station

## FOR HIGH RELIABILITY MICROELECTRONIC PACKAGE ASSEMBLY

The Model 1200 Table-Top Vacuum Solder Reflow Station has been designed for process development and low volume production of Flux-Free and Void-Free soldered joints in microelectronic packages and components. The station is easy to use and profile for a wide variety of soldering tasks. A ramping temperature controller is combined with customized PLC's to provide automatic process control.

The aluminum process chamber is accessed via a manually locking lid for rapid entry and sealing. The heated work area is located at the top of the chamber for easy access. A large viewing window in the cover provides invaluable assistance in determining the proper processing temperatures for solder reflow.

Heat is provided by radiant energy emitted from a uniform resistive graphite heating element. The radiant energy heats a removable flat hot plate which may be machined with cavities to hold the parts to be soldered. The hot plate is typically made from high emissivity graphite, but may also be metallic. A single type K thermocouple inserted directly into the hot plate monitors the process temperature and provides feedback to the proportional temperature controller. A polished radiation shield minimizes heat loss, and excess process chamber heat is dissipated directly with water cooling.

## TYPICAL APPLICATIONS

- Flux-Free Solder Process Development
- Assembly of Microelectronic Packages
- Hybrid Microelectronic Circuit Assembly
- Void-Free Eutectic Die Attach
- Fiber Optic Package Assembly
- Ceramic Package Sealing

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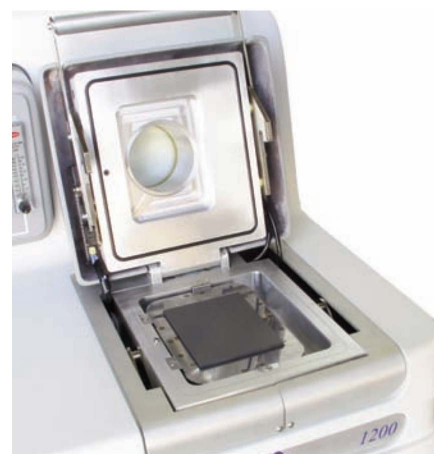
## CONTROL SYSTEM

Control of the processing atmosphere is integrated with the temperature controller through automatically actuated solenoid valves. An external vacuum pump is used to rapidly evacuate the chamber. Nitrogen gas (used for cooling and process) and one additional inert gas can be introduced into the chamber via ports in the lid and chamber bottom. Flow rates and pressures are set on the operator control panel. Void-Free solder joints are most reliably obtained through a carefully controlled and sequenced combination of heat, vacuum and pressurized inert gas.

**Easy-to-Use Operator Control Panel**

## SELECTED 1200 OPTIONS

- Rotary Vane or Dry Vacuum Pumps
- Cooling Water Chiller and Pump
- Multiple Point Temperature Recording
- Moisture Analyzer
- Computer Software with Data Logging
- Consumable Supplies Kit
- Custom Tooling and Applications Assistance
- Digital Vacuum Gauge
- Formic Acid Compatible
- Oxygen Analyzer




**Easy-Open Cover with Viewing Window**

## SPECIFICATIONS*

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|---|---|
| Maximum Operating Temperature | 450 °C |
| Minimum Vacuum Level | 100 millitorr (0.13 mbar) |
| Maximum Operating Pressure | 50 psig (4.5 bar) |
| Heated Area | 5.0 x 4.0 in (125 x 100 mm) |
| Recommended Process Area | 4.5 x 3.5 in (115 x 90 mm) |
| Thermal Uniformity Process Area | 5 °C or better |
| Maximum Heating Rate in Vacuum | 4 °C/sec |
| Process Gasses | Nitrogen plus 1 optional at 75 psig (3.5 kg/cm$^2$) |
| Cooling Water | Optional - 1 GPM at 30 psig (4 lpm at 2 kg/cm$^2$) |
| Electrical | 3.0 kVA max, 110 or 220 volts single phase, 50/60 Hz |
| Overall Size (W x D x H) | 30.5 x 25 x 19 in (78 x 64 x 48 cm) |
| Weight | 180 lb (80kg) |

* Specifications subject to change

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