SHENZHEN TAKACHIHO TECHNOLOGY CO., LTD.

Fast, Accurate, Steady, Tactical

Vacuum Reflow Oven VR-1200-N

1. Product Introduction

·Takachiho in-line vacuum reflow soldering enables automated mass production of soldering and reduces production costs;

·Built-in vacuum module for sectional vacuum extraction, reducing the void rate to less than 1%;

·The temperature profile can be directly transposed to a common reflow soldering temperature

profile, which is convenient and adjustable;
·Multi-temperature zone design, independent temperature control, to meet the requirements of different temperature profiles;
·Effectively solves the porosity and cavities appeared after welding; the rate of cavities can be reduced to less than 1%;
·Highly efficient vacuum pumping unit for fast pressure reduction;
·Equipped with a three-stage transportation system: heating zone, vacuum unit and cooling section, individually adjustable;
·Efficient production capacity with an average production beat of 40-60 seconds;
·Efficient flux recovery system to prevent rosin residue;
·Vacuum pressure measurements react to values in the furnace chamber and not to vacuum pump values
·Vacuum as low as 2 mbar effectively reduces the number of voids
·Three-stage transfer system: heating zone, vacuum zone and cooling zone
·Automatic positioning of the furnace chamber to the process or maintenance position
·Excellent cooling performance
·Low maintenance requirements and reduced downtime

2. Advantageous features

High efficiency and low maintenance

Takachiho reflow soldering with the vacuum option effectively solves the problems of air holes, voids and gaps that occur after soldering, reducing the void rate to less than 1% at a maximum vacuum pressure of 10mhar-5mbar;

Vacuum pressure and vacuum rate can be set individually and saved as curve parameters. This integrated solution makes the production process more stable and efficient, avoids high void rates that can lead to re-soldering or scrap of PCBs, and reduces production costs.

Precise pressure and temperature control curves

As with standard reflow soldering, the heating zones are insulated from each other and the temperature of each zone can be adjusted individually, ensuring flexible temperature profiles and soldering processes;

When the vacuum process is switched on, the temperature profile can still reach the set values (TL ≤ 90s, TP

≤ 240°C) even at pressures below 10 mbar; with the aid of infrared heating inside the chamber, the temperature of the components in the vacuum chamber unit can reach the regular standard settings, ensuring a highly efficient production process at high temperatures.

Comparison of vacuum welding results

Nitrogen environment welding: the incidence of welding bubbles under normal atmospheric pressure is about 25%.

Nitrogen environment + vacuum welding: welding under vacuum air pressure, the incidence of bubbles is about 1%-5%, and can even reach about 0.5%.

3. Equipment parameters

- Outer size: 7160*1670*1460mm
- Main Color: Computer Gray
- Net weight: Approx. 4250KG
- Exhaust air volume: 10m3/min×2 channels
- Power supply: 5-wire 3-phase; 380V 50/60HZ
- Power: Starting power 62KW, working power 16KW
- Heating up time: about 45mins
- Temperature range: preheating zone - 300°C, high temperature zone - 300°C
- Vacuum degree: 1mbar~10mbar
- Maximum PCB width: 460mm
- Part height: 40mm above the board / 30mm below the board
- Direction of transportation: left to right
- Rail fixing method: front fixing
- Height of guide rail from the ground: 900±20 mm
- Transportation speed: 300-2000mm/min
- Parameter storage: can store a variety of production setup parameters and conditions
- Abnormal alarm: ultra-high or ultra-low temperature alarm, sound, light two ways
- Lubricating oil filling: automatic manual mode can be switched freely

4. Equipment Configuration

- Number of heating/cooling zones: 7 preheating zones, 2 high temperature zones + vacuum chamber, 4 water temperature cooling zones
- Heating zone length: 3850mm
- Temperature control mode: PID closed-loop control + SSR drive;
- Temperature control accuracy: ± 1.0°
- Temperature test line: 4 pcs
- PCB Transportation Method: Chain
- Cooling method: water-cooled, 5 HP external water cooler, sufficient cooling capacity to meet the requirements of lead-free process.
- Motorized opening of the upper temperature zone cover: standard equipment
- Three modes of operation: Run/Demo/Edit Standard configuration
- Online editing function: standard configuration
- Flux management: Nitrogen chamber with standard air circulation filtration, optimizing the furnace environment, easy to maintain.

5. Nitrogen system

- Inlet and outlet nitrogen protection device
- Flux Recovery System
- Nitrogen flow meter
- Nitrogen consumption (standard) 500PPM at 25m³/hr

6. List of main accessories

Name	Brand	Place of origin
Single-stage oil vacuum pumps	Puxu	Germany
Absolute Pressure Sensors	Laibao	Germany
Converter	Mitsubishi	Japan
Servo drive	Huichuan	China
Servo motor	Huichuan	China
Industrial PLC	Beifu	Germany
Industrial Control Host	Yanjing	China
Monitor	Philips	Japan
Bus module	Beifu	Germany
Temperature control module	Beifu	Germany
Digital Output Module	Beifu	Germany
Solenoids	SMC	Japan
Regulators	SMC	Japan
Fuse wire	Zhengtai	China
Relay	OMRON	Japan
Middle relay	OMRON	Japan
Intermediate Relay Base	OMRON	Japan
Solid State Relay	Jiale	Switzerland
Monitoring Relay	Jiale	Switzerland
Three-phase filters	Mengsheng	China
Three-phase filters	Huibodun	China
Phase Sequence Protector	Jiale	Switzerland
Contactor	Schneider	Germany
High temperature fiber	Mingzhi	Japan
Optical reflector	Xike	Germany
Switching power supply	Mingwei	China-Taiwan

Oxygenimeter	Jilairui	China
heat pipe	Luquan	China-Taiwan
High Temperature Motor	Sanyue	China-Taiwan
32A Double Pole Switch	Schneider	Germany
Protruding plate-glazed eyes	OMRON	Japan
Lifting Screws	Kangfeiya	China-Taiwan
Flowmeter	Yuanda	China
Limit switch	Schneider	Germany
UPS	Tianma	China
Button	Hequan	Japan
Oil injection pump	Ruirun Machinery	China
Tricolor light	Ouen	China
Pressure sensors	Qidian	China
bear	NSK	Japan
thermocouples	Baoguang	China-Hongkong

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