

A. General Specifications

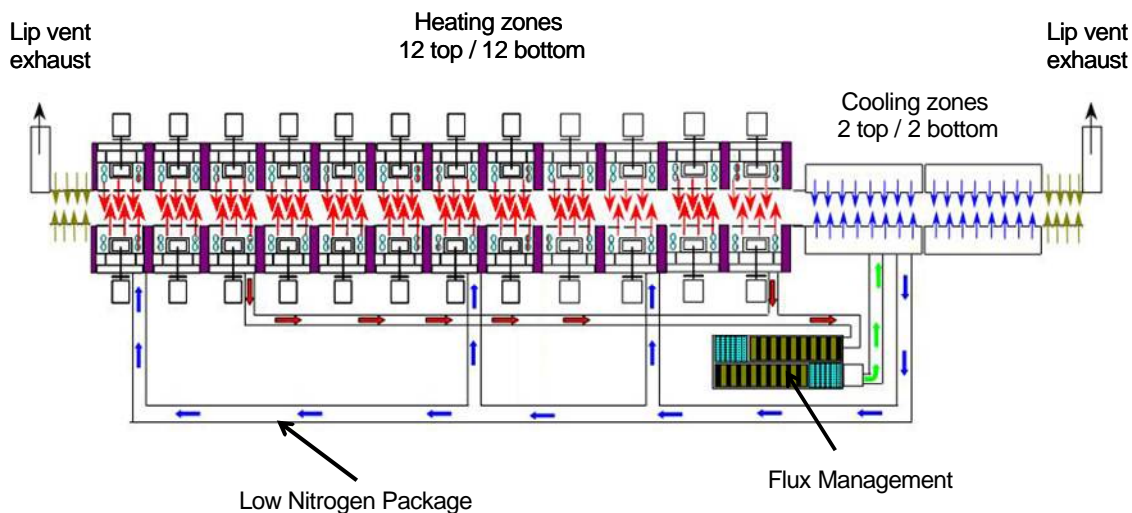
Maximum temperature rating (all zones):	350°C
Nominal operating temperature:	80-350°C
Number of controlled heated zones:	12 Top 12 Bottom
Oven atmosphere:	Air/N ₂
Working dimensions:	
Conveyor belt	457 mm
Product clearance (standard). [Other clearances available]	50,8 mm (+30,5/-20,3)



B. Dimensional Layout



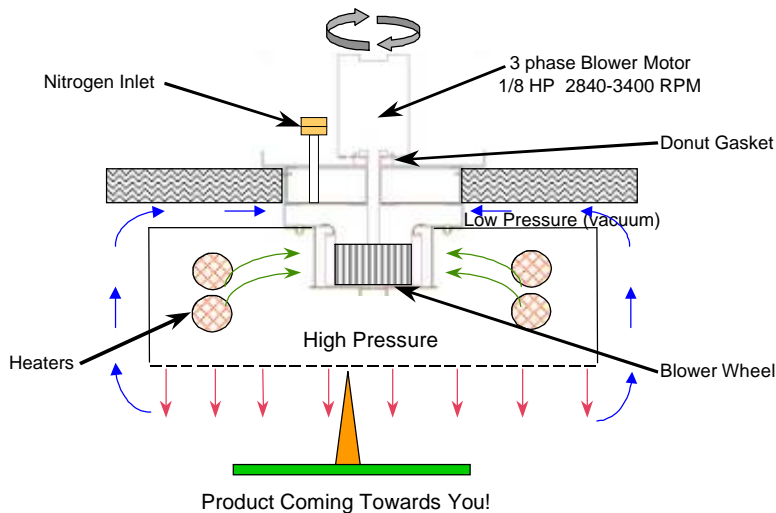
Description	mm
Entrance Lip Vent Exhaust and Inert Baffle Curtain	698,0
Zone 1	317,5
Zone 2	317,5
Zone 3	317,5
Zone 4	317,5
Zone 5	317,5
Zone 6	317,5
Zone 7	317,5
Zone 8	317,5
Zone 9	317,5
Zone 10	317,5
Zone 11	317,5
Zone 12	317,5
Total Heated Length	3810
Cooling Transition Vestibule	100
Cooling Zone 1 (top/bottom)	584
Cooling Zone 2 (top/bottom)	584
Total Active Cooling Length	1168
Exit Inert Baffle Curtain and Lip Vent Exhaust	698
Total System Length	6474
Total System Width	1524
Total System Height	1524
(Assumes 914 mm Hearth Line)	



C. Process Chamber

Heating Section

- Heating is accomplished via *Forced Impingement Convection* with side to side gas recirculation. Forced convection is provided by a proprietary blower system.
- Each zone utilizes BTU's *Porcupine II heating element*. This element features a low mass, high surface area open coil wire arrangement for fast response time and high reliability.
- Zones 1, 2, 10, 11 and 12 employ 5 kW heating elements top and bottom. Zones 3-9 employ 2,7 kW heating elements top and bottom. 5 kW heating elements are available for all zones as an option.
- Oven loading capability is 10 kg/m² based on a nominal conveyor speed of 1,15 m/min. With optional 5kW heaters in all zones the loading capacity increases to 15 kg/m².
- The process chamber is a clamshell design and includes the capability to process large format printed circuit boards up to 457 mm wide (optional up to 610 mm).
- Cross belt temperature uniformity is within a +/- 2°C delta T in the reflow zone (using standard BTU uniformity test board).
- Zone to zone temperature isolation is greater than 60°C between zone 9 through 12.
- Access to the process chamber is accomplished via Powered Hood Lift actuators.



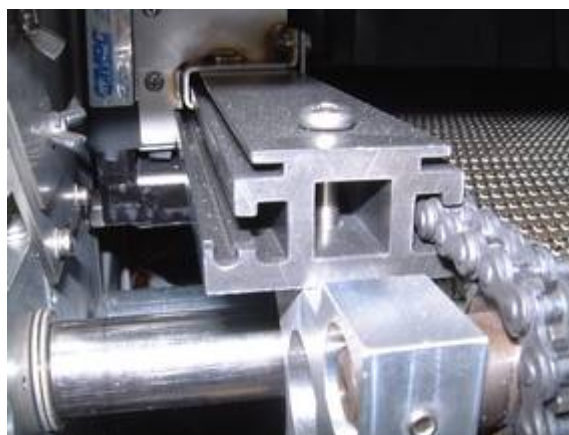
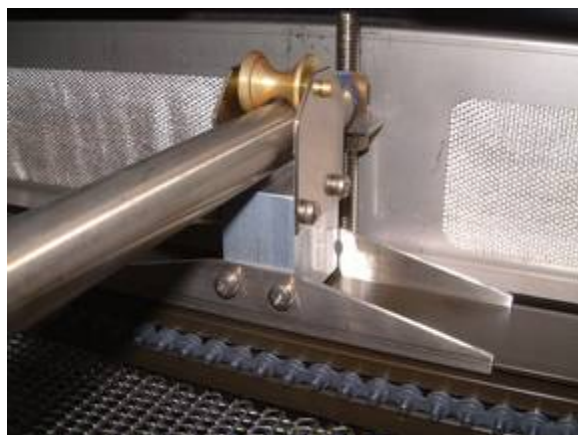
Cooling Section

- Four (4) cooling zones are provided as standard (2 top / 2 bottom).
- Cooling is accomplished via top and bottom forced convection cooled by water heat exchangers.
- Cooling Water Flow Fail Alarm and water detection are standard.
- Closed loop cooling control is available as an option.
- Access to heat exchangers and filters is very easy and parts can be removed within minutes.

D. Conveyor System

Conveyor Belt	
Belt Width	457 mm
Material	302 Stainless Steel Flat Flex
Conveyor Speed Range	25,4 – 152,4 cm/min.
Conveyor Speed Nominal	115 cm/min.
Product Clearance	51 mm (76 mm optional)
Drive Motor	1/16 hp / brushless DC
Belt Height from floor	839 mm – 991 mm
Rail Edge Conveyor (optional)	
Material	#35 steel roller chain
Width	51 – 457 mm
Support pin length	4,75 mm (std) 9,5 mm and others available on request
Pin to pin distance	9,5 mm
Support pin height (clearances)	30,5 mm above pin 20,3 mm below pin
Rail parallelism	+/- 0,5 mm
Rail height from floor	859 mm – 1011 mm

- Programmable (recipe controlled) width adjust is included with the *optional* rail edge conveyor.
- Programmable multi-port lubricator is included with the *optional* rail edge conveyor.
- Belt deviation detection via programmable deviation alarm.
- Belt “Stopped” alarm is standard over torque protection provided via slip clutch.
- Alarm and motion messaging via WINCON™.



E. Oven Controls

Temperature Control

- Temperature control is accomplished by twenty-four (24) PID control loops of the Oven Control Unit (microprocessor) and Windows™ WINCON™ operating software. Each zone is divided into independent top and bottom control. Temperature control accuracy is +/- 0,5°C no-load.
- Optional Cooling control is accomplished by varying blower speed. Cooling rate control is selected via WINCON™ software allowing the user to select the cooling rate.
- Process over temperature protection is accomplished via WINCON™ software using programmable alarm limits. Power to the heaters is removed if the temperature exceeds the high alarm limit.
- *Redundant independent electronic over temperature protection* is standard. In the event of an over-temperature condition, power to the heaters is removed and audible/visual alarm activates. The conveyor continues to operate in this condition.

Operator Interface

- Controls are located on the **RIGHT HAND SIDE** as viewed from the oven entrance.
- The computer keyboard and flat panel display are located at the entrance front of the oven.
- Programming is accomplished via BTU's WINCON software. WINCON operates on the Windows™ XP Pro platform.
- Thermal profiling can be accomplished using the six dedicated thermocouple inputs located at the oven entrance. BTU includes WinKIC™ by *KIC Thermal Profiling* as an integrated software solution.
- Four (4) Emergency power off buttons are provided, two (2) are located at the loading and two (2) at the unloading sections.
- A four color light tower to monitor the oven status is standard. Indicators are Red – Alarm condition, Yellow – Set-up or Alert condition, Green – Ready Condition and Blue – N2 on.
- Smart Tracker provides an entrance and exit photocell, which senses product entering and exiting the oven. This allows the system to count products for a given recipe, detect product drop/lost and display a graphical view of the products. In the event of a product drop, an alarm will sound.
- Smart Tracker also manages the oven SMEMA ready/busy logic for up and downstream communications to other equipment in the assembly line.
- Automatic shutdown sequencing is standard.

F. Atmosphere System

Gas Distribution System

- The atmosphere system allows for operation in either air or nitrogen atmospheres. Process gas is delivered via flow meters located at the front exit area of the oven.

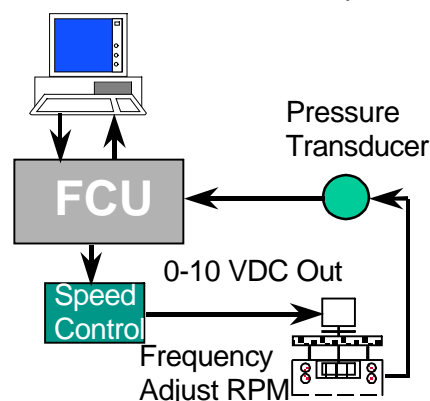
Qty.	Location
1	Entrance Curtain Top/Bottom
1	Zone 1 Top/Bottom
1	Zone 9/10 Top and Bottom
1	Zone 11/12 Top and Bottom
1	Cooling Zone
1	Exit Curtain Top/Bottom

- Nitrogen containment capability ≤ 50 ppm above source gas purity in the heated section. The cooling section containment to ≤ 100 ppm above source gas purity.
- A dual atmosphere inlet provides programmable switching between process gas atmospheres. This is accomplished via the WINCON software and gas solenoid valves, which switch between the selected process gas of air or nitrogen.
- A nitrogen gas idle mode reduces N2 consumption when the oven is not running product.

G. Lead-Free Soldering

All Pyramax reflow solder ovens are Lead Free compatible as standard. The Pyramax's high efficiency heat transfer characteristics provide more than sufficient scope to process all popular lead free pastes. BTU's experience in high temperature furnaces has proved invaluable in developing the optimum engineering technology to ensure that both materials used and design parameters are compatible with robust and continuous production at elevated soldering temperatures.

In order to provide a fully closed loop control of the process BTU have developed a unique (optional) feature: - Closed Loop Blower Speed Control. This option was developed for various applications such as flip chip, BGA, CSP, 0201, lead-free, etc... With this option the convection rate is programmable and continuously monitored and controlled. It is a lot easier with this option to maintain the profile in the tighter process window dictated by the lead-free solder pastes.



H. Flux Management System (Optional)

The Pyramax 150Nz12 reflow solder oven features the new high efficiency Tandem flux manager system. The tandem features dual water-cooled heat exchangers, which collect twice as much flux as conventional systems, the additional gas cooling effect provided by the secondary heat exchanger allows the tandem to extract flux constituents, which elude other systems. The high volume flux removal trays can hold 100% more collected flux than earlier models, providing a significantly extended maintenance interval.

In order to provide a maximum “Uptime” of the Pyramax systems the Flux Management system can be cleaned during production without disturbing the temperature profile and the atmosphere. The new filters catch the smaller particles and reduce significantly the residues in the cooling zones.



I. Utility Requirements

(Electrical power based on std. Heater configuration. See Installation drawing for final power).
Other voltage requirements available on demand.

Voltage	Startup Power	Operating Power
380/220 3Ø / 4 wire	94 kW	15 – 20 kW
400/230 3Ø / 4 wire	103 kW	15 – 20 kW
415/240 3Ø / 4 wire	112 kW	15 – 20 kW
Utility	Supply Pressure	Maximum Flow Rate
Nitrogen	4 - 6 Bar	40 m ³ /h
Water Supply	2 - 6 Bar	30 lpm
Exhaust Entrance	0,1 – 0,05 iwc	510 m ³ /h (typical 300 m ³ /h)
Exhaust Exit	0,1 – 0,05 iwc	510 m ³ /h (typical 470 m ³ /h)

(NOTE: Consult final installation drawing for precise specifications. This is to be used as a guide)

- Electrical values are estimated for full load. Actual startup power may vary depending on oven configuration. Operating power is typical and dependent on product loading. Soft start power limiting is possible via WINCON™ software and should be specified at time of order.
- All utility values must be finalized at time of order. A detailed installation drawing is provided once final configuration is established.

J. Physical Characteristics

- Standard Color: Pillar White
- Dry Weight: 3.765 kg
- Shipping Weight: Skid: 3.990 kg
Crate: 4.220 kg

K. Documentation

- System includes BTU's electronic documentation package, which is shipped on the oven PC and on Compact Disc. The package includes:
 - User Documentation and Maintenance Documentation
 - Troubleshooting and Repair Documentation
 - Part Identification Software
 - 1 Hard Copy manual

L. CE MARK

The furnace complies with following CE standards and directives:

EN ISO 12100-1:	2003	Safety of machinery - Part 1 Basic concept, terminology, methodology.
EN ISO 12100-2:	2003	Safety of machinery - Part 2 Technical principals and specifications.
EN 294:	1992	Safety of machinery - Distances to prevent danger zones.
EN 349:	1993	Safety of machinery - Minimum gaps to avoid crushing.
EN 418:	1992	Safety of machinery - Emergency Stop functions.
EN60204-1:	2006	Safety of machinery - Electrical equipment of machines.
EN 61000-6-4:	2001	Electromagnetic compatibility - Generic emission standard.
EN 61000-6-2:	2001	Electromagnetic compatibility - Generic immunity standard.
EN55011:	1998	Limits and methods of measurement of radio disturbance characteristics of industrial equipment.

Following the provisions of Directives:

2006/95/EC	Low Voltage Directive- (OJ L374 of 27 th December 2006) replaced 73/23/EEC
2004/108/EC	EMC Directive (OJ L390 of 31 st December 2004) replaced 89/336/EEC
98/37/EC	Machinery Directive (OJ L207, 23 rd July 1998)

CE plate is applied and CE certificate is included.