A. General Specifications

Maximum temperature rating:	350°C	
Nominal operating temperature:	80-350°C	
Number of controlled heated zones:	8 Top	8 Bottom
Oven atmosphere:	Air/N_2	
Working dimensions:		
Conveyor belt	18.0 in.	457 mm
Product clearance	2.0 in.	51 mm

B. Dimensional Layout

Description	Inches	Centimeters
Entrance Lip Vent Exhaust and Inert Baffle Curtain	26	66.0
Zone 1	12.5	31.8
Zone 2	12.5	31.8
Zone 3	12.5	31.8
Zone 4	12.5	31.8
Zone 5	12.5	31.8
Zone 6	12.5	31.8
Zone 7	12.5	31.8
Zone 8	12.5	31.8
Total Heated Length	***100***	***254.0***
Cooling Transition Vestibule	3	7.6
Cooling Zone (Top and Bottom)	28	71.1
Exit Inert Baffle Curtain and Lip Vent Exhaust	26	66.0
Total System Length	***183***	***464.8***
Total System Width	***60***	***152.4***
Total System Height ***(Assumes 36" Hearth Line)***	***60***	***152.4***

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, 7 and 8 employ *5-kilowatt* heating elements top and bottom. Zones 3, 4, 5 and 6 employ *2.7-kilowatt* heating elements top and bottom. 5-kilowatt heating elements are available for all zones as an option.
- Oven loading capability is 2 lbs/ft^2 (10 Kg/m^2) based on a nominal conveyor speed of 32 in/min. (81.3 cm/min.). With optional 5kW heaters in all zones the loading capacity increases to 3 lbs/ft^2 (15 Kg/m^2)
- The process chamber is a clamshell design and includes the capability to process large format printed circuit boards up to 18 X 24 inches (457mm X 610mm). Optional 24 X 24 Inches (610mm X 610mm) printed circuit board processing is also available.
- Cross belt temperature uniformity is within a 4° C delta T in the reflow zone. (using standard BTU uniformity test board)
- Zone to zone temperature isolation is ≥ 60°C between the profile soak and reflow spike.
- Access to the process chamber is accomplished via Powered Hood Lift actuators.

Cooling Section

- Two (2) cooling zones are provided (1 top / 1 bottom). Four cooling zones optional.
- Cooling is accomplished via top and bottom forced convection cooled by a water heat exchanger.

- Cooling Water Flow Fail Alarm and water detection are standard
- Closed loop cooling control is available as an option.

D. Conveyor System

Conveyor Belt		
Belt Width	18 in.	457 mm
Material	302 Stainless Steel Flat Flex	
Conveyor Speed Range	10 - 60 in/min.	25.4 – 152.4 cm/min.
Conveyor Speed Nominal	32 in/min.	81.3 cm/min.
Conveyor Speed Control Accuracy	+/-0.3%	
Product Clearance	2 in. (3 in. optional)	51 mm (76 mm optional)
Drive Motor	1/16 hp / brushless DC	
Conveyor Height from floor	33 - 39 in.	838 - 991 mm
Rail Edge Conveyor (optional)		
Material	#35 steel roller chain	
Width	2 – 18 in.	51 mm - 45.7 mm
Support pin length	0.187 in. (std)	4.7 mm (std)
Pin to pin distance	0.375 in.	9.5 mm
Support pin height (clearances)	1.2 in. above pin 0.8 in. below pin	30.5 mm above pin 20.3 mm below pin
Rail parallelism	0.040 in.	1.0 mm
Rail height from floor	33.8 in. – 39.8 in.	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 with over torque protection provided via slip clutch.
- Alarm and motion messaging via WINCON™.

E. Oven Controls

Temperature Control

- Temperature control is accomplished by sixteen (16) 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™ platform.
- Thermal profiling can be accomplished using the three (3) dedicated thermocouple inputs located at the oven entrance. BTU is compatible with *KIC and ECD* 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 – N_2 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 5/6 Top/Bottom
1	Zone 7/8 Top/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 N_2 consumption when the oven is not running product.

G. Utility Requirements (Electrical power based on std. Heater config. See Installation drawing for final power)

Voltage	Startup Power	Operating Power
208 3∅ / 3 wire	49 kW	14-17 kW
220 3∅ / 3 wire	54 kW	14-17 kW
230 3∅ / 3 wire	59 kW	14-17 kW
240 3∅ / 3 wire	65 kW	14-17 kW
440 3∅ / 3 wire	54 kW	14-17 kW
480 3∅ / 3 wire (STD)	65 kW	14-17 kW
380/220 3∅ / 4 wire	54 kW	14-17 kW
400/230 3∅ / 4 wire	59 kW	14-17 kW
415/240 3∅ / 4 wire	65 kW	14-17 kW
Utility	**Supply Pressure**	**Maximum Flow Rate**
Nitrogen	70 PSI / 4.83 Bar	1200 ft^3/hr / 34 m^3/hr
Water Supply	30 PSI / 2.0 Bar	4 gpm / 15.1 lpm
Exhaust Entrance	0.05 - 0.1 iwc	300 ft^3/min / 8.5 m^3/min
Exhaust Exit	0.05 - 0.1 iwc	300 ft^3/min / 8.5 m^3/min

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

- Electrical values are estimated. 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.

H. Physical Characteristics

- Standard Color: Pillar White
- Dry Weight: 4,800 lbs. / 2,177 kg

Specifications Subject to Change Without Notice

- Shipping Weight: Skid: 5,200 lbs. / 2,359 kg
  Crate: 5,900 lbs. / 2,676 kg

I. Documentation

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