

## A. General Specifications

Maximum temperature rating:	350°C	
Nominal operating temperature:	80-350°C	
Number of controlled heated zones:	6 Top	3 Bottom
Oven atmosphere:	Air	
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	14.0	35.6
Zone 1 (top and bottom)	12.5	31.8
Zone 2 (top only)	12.5	31.8
Zone 3 (top only)	12.5	31.8
Zone 4 (top only)	12.5	31.8
Zone 5 (top and bottom)	12.5	31.8
Zone 6 (top and bottom)	12.5	31.8
<b>Total Heated Length</b>	<b>75</b>	<b>190.5</b>
Lip Vent Exhaust / Cooling Transition	14.0	35.6
Fan Cooling	24.0	61.0
<b>Total System Length</b>	<b>127</b>	<b>322.6</b>
<b>Total System Width</b>	<b>60</b>	<b>152.4</b>
<b>Total System Height</b>	<b>60</b>	<b>152.4</b>
<i>(Assumes 36" Hearth Line)</i>		

## 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.
- Heated zones utilize 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, 5 and 6 employ *2.7-kilowatt* heating elements top and bottom. Zones 2, 3 and 4 employ *2.7-kilowatt* heating elements top only. Optional bottom zones available for all zones 2, 3 and 4.
- Oven loading capability is 2 lbs/ft<sup>2</sup> (10 Kg/m<sup>2</sup>) based on a nominal conveyor speed of 24 in/min. (61 cm/min.).
- 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).
- 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

- Cooling is accomplished via fans with forced convection.
- Closed loop cooling control is available as an option.

## D. Conveyor System

<b>Conveyor Belt</b>		
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	24 in/min.	61cm/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 mm - 991 mm
<b>Rail Edge Conveyor (optional)</b>		
Material	#35 steel roller chain	
Width	2 – 18 in.	5.1 - 45.7 cm
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 nine (9) PID control loops of the Oven Control Unit (microprocessor) and Windows™ WINCON™ operating software. Each zone has independent 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 operating on Windows™ platform.
- Thermal profiling can be accomplished using three 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 three color light tower to monitor the oven status is standard. Indicators are Red – Alarm condition, Yellow – Set-up or Alert condition and Green – Ready Condition.
- 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

- The atmosphere system allows for operation in air.

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

Voltage	Startup Power	Operating Power
208 3Ø / 3 wire	20 kW	8-11 kW
220 3Ø / 3 wire	23 kW	8-11 kW
230 3Ø / 3 wire	25 kW	8-11 kW
240 3Ø / 3 wire	27 kW	8-11 kW
440 3Ø / 3 wire	23 kW	8-11 kW
480 3Ø / 3 wire (STD)	27 kW	8-11 kW
380/220 3Ø / 4 wire	23 kW	8-11 kW
400/230 3Ø / 4 wire	25 kW	8-11 kW
415/240 3Ø / 4 wire	27 kW	8-11 kW
Utility	Supply Pressure	Maximum Flow Rate
Exhaust Entrance	0.05 - 0.1 iwc	300 ft <sup>3</sup> /min / 8.5 m <sup>3</sup> /min
Exhaust Exit	0.05 - 0.1 iwc	300 ft <sup>3</sup> /min / 8.5 m <sup>3</sup> /min

(NOTE: Consult final installation drawing for precise specifications. This is to be used as 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: 3,100 lbs. / 1,406 kg
- Shipping Weight: Skid: 3,500 lbs. / 1,587 kg  
Crate: 3,900 lbs. / 1,769kg

## I. Documentation

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