

# ThermaFlo 8N

## *Fan Forced Convection SMT Solder Reflow System*

**ThermaFlo 8N** is a fan forced nitrogen or air atmosphere convection oven designed for SMT reflow or curing processes. **ThermaFlo 8N** uses our exclusive ConstantClean™ technique to continuously clean convection air jets in the oven. Research International's patented convection flow circulation pattern automatically purges flux from the heater cavity – eliminating cleaning maintenance. CoolClean™ reusable flux condensation plates are removable in minutes from the nitrogen liquid cooling section.

The innovative **ThermaFlo 8N** design provides convection heat transfer using fewer fans than other ovens in its class. The result is improved heat transfer and reflow process repeatability.

### Standard System Features

- Flux-Free Heater Cavity with ConstantClean™ Technology
- Nitrogen Liquid Cooling with CoolClean™ Flux Condensation Plates
- 98-inch (249 cm) Heated Length; 6 Vertical Heat Zones
- Wire Belt Conveyor
- Computer Controlled Air/Nitrogen Changeover
- Pentium™-Compatible Computer and SVGA Color Monitor with Computer Arm
- Multi-Language StarWin™ Oven Operating Software (32 bit - Windows 95™)
- Power Clamshell
- Remote Communications Package
- Upper and Lower Product Exhaust
- Final Product Fan Cooling

### Safety and Quality Features

- Common European (CE) Safety Certification
- 3 Color Signal Light Tower
- Redundant Overtemperature Protection
- Emergency Stop Buttons (4)

### Options (Customized Features Also Available)

- **Edge Conveyor** – Width adjustable from 2-18 inches (5-46 cm); component clearance 1¼ inch (3 cm) below and 1 inch (2.5 cm) above board.
- **Battery Back-Up** – In the event of a power failure, conveyor runs for 10-20 minutes to exit the boards from the oven.
- **SMEMA Interface** – Link to upstream and downstream machines to communicate line readiness. Includes board count sensor.
- **Board Fall Detection** – Indicates proper edge conveyor board transport.
- **Manual Underboard Support** – Full length support with manual location positioning.
- **StarLog™ SPC Software** – Graphing display program for all critical reflow process parameters.
- **Direct Couple Exhaust** – Allows direct facilities exhaust connection to the oven.
- **Custom Panel Color** – Customer specified to match assembly line.
- **Computerized Conveyor Width Adjust** – Software controlled motorized edge conveyor width adjustment.
- **Motorized Conveyor Width Adjust** – Switch activated motor driven rail width adjustment.
- **Oxygen Analyzer** – Monitors PPM levels.

<b>Model</b>	<b>ThermaFlo 8N</b>			
<b>Dimensions</b>				
Overall Length	205 Inches (521 cm)			
Overall Width	43 Inches (109 cm)			
Overall Height	64 Inches (162 cm)			
On-Load Length	18 Inches (46 cm)			
Off-Load Length	18 Inches (46 cm)			
Net Weight	3400 Pounds (1543 kg)			
Shipping Weight	4000 Pounds (1814 kg)			
Crate Dimensions (L x W x H)	213 x 50 x 70 Inches (541 x 127 x 178 cm)			
<b>Power Requirements and Safety Standards</b>				
Voltage	480VAC, 50/60 Hz	415VAC, 50/60 Hz	380VAC, 50/60 Hz	220VAC, 50/60 Hz
Maximum Startup Current	46.6 kVa	49.3 kVa	42.1 kVa	46.4 kVa
Typical Operating Current	11.7 kVa	12.3 kVa	10.6 kVa	11.6 kVa
Primary Fuses	58 Amps	72 Amps	66 Amps	126 Amps
Lockable Safety Disconnect	Standard			
3 Color Light Tower	Red=Alarm/Yellow=Not Ready/Green=Ready (top to bottom)			
Industrial Dimension Controller	CPU card, 3 analog I/O cards, oven interface board			
SMEMA Transport Communications	Connectors entrance & exit end meets std. Spec., entrance sensor indicates product presence			
Electric Clamshell Lift	Switch Activated; Opens heater cavity 12 Inches (30 cm) < 60 seconds			
CE Certification	Standard			
Redundant Overtemperature Protection	Temperature monitoring separate from controller to prevent any machine damage			
<b>Oven Interface</b>				
Interface Computer	Compaq™ 133 MHz Pentium™ (min) Processor, 8 meg RAM, 1.2 gig hard drive, Windows 95, 3.5" floppy drive, serial port			
StarWin™ Interface Software	32 bit, true Windows 95™ interface package			
Modem Communications	28.8 modem (minimum) that allows remote control of oven			
StarLog™ SPC Software	SPC application to track and record all critical reflow parameters			
<b>Thermal Process Chamber Performance</b>				
Heat Transfer Method	Fan Forced Convection; Nitrogen or Air Atmosphere			
Heated Length	98 Inches (249 cm)			
Independent Temperature Control Zones	6 closed loop top zones and 6 closed loop bottom zones			
Edge Conveyor Heat Control	2 zones – one per rail			
Maximum Setpoint Temperature	275°C			
Mass Loading Rates	0% to 90%			
<b>Inert Atmosphere</b>				
Oxygen PPM Range	Typically 50-200 PPM above source			
Nitrogen Consumption	Typically <1500 SCFH (42 cubic meters/hour)			
Nitrogen Monitoring Ports	Preheat and Reflow; Oxygen analyzer [optional]			
<b>Exhaust Specifications</b>				
Entrance Exhaust Output	~ 400 cubic feet/minute (12 cubic meters/minute)			
Exit Exhaust Output	~ 300 cubic feet/minute (9 cubic meters/minute)			
Witches hat indirect connection on each	Standard; Direct Couple Exhaust [optional]			
Exhaust above and below conveyor	Standard			
<b>Conveyor Specifications – Lifetime Warranty</b>				
Conveyor Type	Stainless steel wire belt [standard]. Optional stainless steel roller chain on patented tensioned stainless steel rail. Tension keeps rail straight as heat causes rail expansion.			
Edge Conveyor Pin Length	0.17 Inches (0.43 cm) Standard			
Conveyor Speed Range	10 – 100 Inches/minute (25 – 250 cm/min)			
Conveyor Speed Accuracy	±0.5% to setpoint			
Conveyor Parallelism	±0.020 Inches (±0.05 cm)			
Product Flow Direction	Left-to-Right [standard] or Right-to-Left [optional]; Front or Rear Rail Fixed			
Conveyor Height Above Floor	34¼ – 37 3/8 Inches (87 cm – 95 cm); SMEMA Standard			
Usable Conveyor Width	18 Inches (46 cm)			
Usable Conveyor Width with Edge Conveyor	Adjustable 2 – 18 Inches (5 – 46 cm), optional motorized or computerized width control			
Product Clearance Above Conveyor	1 Inch (2.5 cm)			
Product Clearance Below Primary Conveyor	1¼ Inches (32 mm) with installed Edge Conveyor			
Full-Length Underboard Support System [Optional]	0.2 Inch (3 mm) board contact width, bead chain support with tensioned rail, manual or computerized/motorized position adjustment, z-height adjustable.			
<b>Nitrogen Cooling System Specifications</b>				
Nitrogen Cooling Section Length	35 Inches (89 cm)			
Nitrogen Cooling Method	Closed loop chilled water, above and below board cooling with laminar flow air curtain			
Internal Cooling Unit Capacity	12,000 BTU at 20°C (70°F) ambient			
CoolClean™ Flux Condensation Collectors	Maximum temperature NTE 150°C; Collector plates replaceable < 20 minutes			

1860 Smithtown Ave  
Ronkonkoma, NY USA 11779  
Phone: (631) 981-7081 Fax: (631) 981-7095

www.research-intl.com  
Email: sales@research-intl.com  
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