

LCC/LCD Stackable clean process ovens

Save valuable floor space

Stainless steel interior and exterior

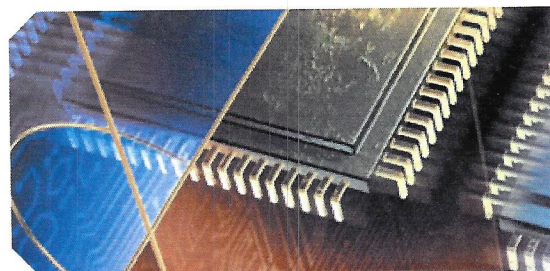
The Despatch LCC/LCD stackable clean process ovens are designed to save valuable floor space and provide a variety of tailored options for your specific needs. Typical applications for these ovens include die-bond curing and other semiconductor packaging processes, depyrogenation, sterilization and drying for life sciences. The oven is CE compliant for universal acceptance and configured for 220/240 volts and 50/60 hz.

For production environment processes where minimal contamination is essential, the LCC and LCD Series ovens offer the highest standards in HEPA filtration. Re-circulated airflow is 100% HEPA filtered for operation at ISO Class 5 (Class 100) or better within the oven chamber. Also available in a non-HEPA filter option LLC/LLD.

FEATURES AT A GLANCE

- ◆ Available in air or nitrogen atmosphere configurations (100ppm oxygen capability). Forced exhaust is standard on all models for rapid cooling. Programmable control of the nitrogen and cooling water is standard on the nitrogen atmosphere units.
- ◆ Lockable disconnect switch on the control panel for easy servicing.
- ◆ Protocol Plus™ programmable microprocessor control with real time clock makes oven operation simple and flexible.
- ◆ Stainless steel interior and exterior with all interior seams continuously welded on the insulation side to protect the work chamber from contamination.
- ◆ Programmable door lock with electronic release prevents operators from opening oven door when cycle is in process.
- ◆ Stackable design allows for independent batch processing.
- ◆ HEPA filtration— Recirculated airflow is 100% HEPA (High Efficiency Particulate Air) filtered for operation at ISO Class 5 (Class 100) throughout the cycle.
- ◆ Magnehelic™ gauge monitors the HEPA filter pressure drop so you know when it is time to replace the filter.
- ◆ UL & C-UL listed open control panel.
- ◆ CE compliant.

CE



MODEL OPTIONS

- ◆ Two sizes: 1.6 or 5.1 cu ft (45 or 144 liter)
- ◆ Maximum temperature of 260°C (500°F) with LCC/LLC or 350°C (662°F) with LCD/LLD
- ◆ With HEPA filtration (LCC/LCD) Non-HEPA option (LLC/LLD)
- ◆ Air or nitrogen atmospheres



Protocol Plus™

A Microprocessor Based Oven Controller

Protocol Plus™ is a microprocessor based temperature control system designed to make oven operation simple and flexible. It provides a level of temperature control, versatility, and operational simplicity unmatched in the industry.

Easy To Operate

Protocol Plus™ is easy to use for both simple and complex applications. Temperatures are displayed in either Fahrenheit or Celsius on a large, bright LED panel. Six indicator lights provide an at-a-glance review of the oven's operating status. A 32-character LCD display provides detailed information on oven status and simplifies programming of temperature and time parameters with user-friendly prompts.

Four Operating Modes

Protocol Plus™ provides four operating modes in one versatile, easy-to-use package:

- ◆ Single Set Point: Oven operates continuously at a fixed temperature until turned off.
- ◆ Single Set Point With Timer Control: Oven operates at a fixed temperature for a user-selected time period, then automatically turns off.
- ◆ Auto-Start: Oven automatically starts based on a preset time and day.
- ◆ Multiple Set Points: Temperatures increase or decrease as defined by one of eight pre-programmable "ramp and soak" profiles. Each profile contains up to eight ramp and soak segments. The profiles can be linked to provide additional temperature combinations.



FEATURES AT A GLANCE

- ◆ Large LED temperature display
- ◆ Six status indicator lights
- ◆ 32 character LCD display of set points and program status
- ◆ Can be programmed for multiple set points
- ◆ State-of-the-art microprocessor technology

Fast Start-Up

Protocol Plus™ lets you start the oven with the push of a button. All temperature settings and programming are automatically set to the values used in the previous session.



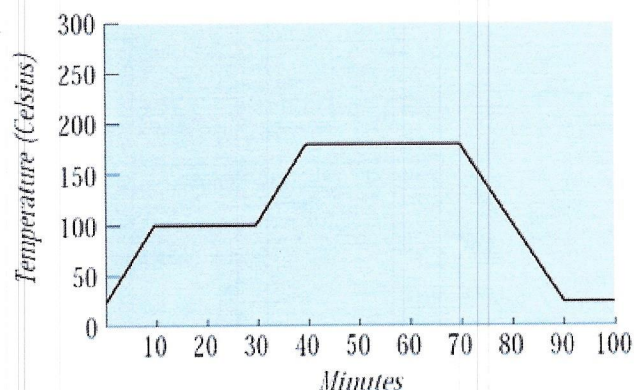
STANDARD FEATURES

- ◆ Calibrating, tuning, and self-diagnostic capabilities
- ◆ Two levels of password security control operator access to program parameters
- ◆ High-limit control turns off the heater if the temperature exceeds user-defined limits. Separate thermocouple and control from main operating controller.
- ◆ An output signal can transmit temperature data to a user-supplied recording device
- ◆ A recovery system terminates, resumes, or suspends operations when power is restored after a power failure
- ◆ Real time clock is built in with auto-start capabilities that allows starting the heating cycle at a specified time of day

OPTIONAL FEATURES

- ◆ Remote start and programming capabilities via a modbus communications link to a personal computer (RS485/422/232)
- ◆ Remote start via digital input from an external device other than a P.C.
- ◆ Four output relays that signal user-specified events/alarm to external alarm devices
- ◆ Protocol Manager™ Monitoring and Data Acquisition Software (use with P.C.)

RAMP AND SOAK PROFILE SAMPLE



PROTOCOL PLUS™

SPECIFICATIONS

Listing	UL, C-UL, CE
Thermocouple	Two Type J Thermocouples -73° to 760°C (-100° to 1,400°F)
Accuracy	+/- 1°C at 25°C after calibration
Method of control	Three mode PID. Two thermocouples provide independent control of temperature and high limit protection

PROTOCOL MANAGER™

Monitoring & Data Acquisition Software

Protocol Manager™ reduces costs through improved process and quality control. Protocol Manager™ software enables communications between a personal computer and up to 32 Despatch ovens equipped with Protocol Plus™ controllers. The user friendly software allows oven control, recipe download and data logging.



SERVICE AND TECHNICAL SUPPORT

service parts: 1-800-473-7373
international service/main: 1-952-469-8230
service fax: 1-952-469-8193
service@despatch.com

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Despatch
INDUSTRIES

LCC 1-14

HEPA

LCC/LCD/LLC/LLD

1-16

1-51

PHYSICAL SPECIFICATIONS

Chamber size (width x depth x height) <i>* Clear opening width is reduced by 1.5" (3.8 cm) due to 3/4" (1.9 cm) shelf supports on each side.</i>	15" x 14 x 14 inches 38" x 36 x 36 cm	23" x 20 x 20 inches 58" x 51 x 51 cm
Capacity in cubic feet (liters)	1.6 (45)	5.1 (144)
Overall size (width x depth x height)	32.5 x 35.5 x 20.75 in. 83 x 90 x 53 cm	40.5 x 42.5 x 27 in. 103 x 108 x 68 cm
Electrical single phase 50/60 HZ <i>* Heater capacity based on 240 volt supply. Operating at 208V will result in 25% reduction in heater output.</i>	220-240 volts* Heater: 3 kW	220-240 volts* Heater: 6 kW
Number of shelves provided	2	2
Maximum number of shelves	5 on 2" (5 cm) centers	8 on 2" (5 cm) centers
Approximate net weight	250 lbs (114 kg)	380 lbs (172 kg)
Approximate shipping weight	350 lbs (159 kg)	525 lbs (238 kg)

FUNCTIONAL SPECIFICATIONS

Time to temperature with no load (40°C to 100°C)	7 minutes	5 minutes
Time to temperature with no load (40°C to 200°C)	30 minutes	27 minutes
Time to temperature with no load (40°C to 260°C)	45 minutes	35 minutes
Time to temperature with no load (40°C to 350°C) <i>* For LCD and LLD only, LCC and LLC max temp is 260°C</i>	60 minutes	50 minutes
Cooling time to temperature with no load (100°C to 55°C) <i>* Based on cooling water supplied at 2 GPM (7.6lpm), 16°C</i>	35 minutes (air) 30 minutes (nitrogen)*	40 minutes (air) 25 minutes (nitrogen)*
Cooling time to temperature with no load (100°C to 55°C) <i>* Based on cooling water supplied at 2 GPM (7.6lpm), 16°C</i>	65 minutes (air) 55 minutes (nitrogen)*	75 minutes (air) 40 minutes (nitrogen)*
Cooling time to temperature with no load (100°C to 55°C) <i>* Based on cooling water supplied at 2 GPM (7.6lpm), 16°C</i>	75 minutes (air) 60 minutes (nitrogen)*	85 minutes (air) 45 minutes (nitrogen)*
Cooling time to temperature with no load (350°C to 55°C) <i>(For LCD and LLD only, LCC and LLC max temp is 260°C)</i> <i>* Based on cooling water supplied at 2 GPM (7.6 lpm), 16°C</i>	90 minutes (air) 80 minutes (nitrogen)*	100 minutes (air) 50 minutes (nitrogen)*
Temperature uniformity at 100°C	+/- 1°C	+/- 1°C
Temperature uniformity at 200°C	+/- 2°C	+/- 2°C
Temperature uniformity at 260°C	+/- 3°C	+/- 3°C
Temperature uniformity at 350°C (For LCD and LLD only)	+/- 4°C	+/- 4°C
Control stability	+/- 0.5°C	+/- 0.5°C
LCC/LLC operating range with 20°C ambient - air atmosphere (nitrogen atmosphere).	40°C-260°C (35°C-260°C)	45°C-260°C (35°C-260°C)
LCD/LLD operating range with 20°C ambient - air atmosphere (nitrogen atmosphere)	40°C-350°C (35°C-350°C)	45°C-350°C (35°C-350°C)
Maximum load capacity	200 lbs (90 kg)	200 lbs (90 kg)
Maximum shelf capacity	50 lbs (23 kg)	25 lbs (11 kg)
1/4 HP recirculating fan	240 CFM (113 lps)	435 CFM (205 lps)

Notes: Uniformity figures are based on a nine-point test conducted in an empty oven after stabilization period. Uniformity can vary slightly depending on unit and operating conditions. Class 100 HEPA filtration will limit ramp rates.

Minimum operating temperature and cooling times are based on 20°C ambient temperature measured at the fresh air inlet

Specifications are subject to change without notice. If the existing specifications differ from yours, ask about our customizing capabilities.

OPTIONS

- ◆ Silicone-free construction
- ◆ Non-HEPA filtration model
- ◆ PC interface for remote input, monitoring and recording (RS485/422/232)
- ◆ Door interlock switch turns off heater and fan when door is opened
- ◆ Cleaning and triple bagging in clean room prior to shipment
- ◆ End of cycle and high limit audible and visual alarms
- ◆ Process control interlock systems
- ◆ Chart recorders
- ◆ IQ/OQ protocol
- ◆ Three color process stack light
- ◆ Teflon™ shelf supports (LLC and LCC only)
- ◆ Stacking hardware
- ◆ Skirted stands
- ◆ Extra shelves
- ◆ Oxygen concentration monitor system
- ◆ Data acquisition software
- ◆ Non-HEPA filtration model (LLC/LLD)
- ◆ Customization available
- ◆ LN2 boost cooling (LLC and LLD only)

Warning: Despatch Stackable Clean Room Ovens are not to be used with flammable solvents, combustible materials or enclosed containers. If your process involves flammable solvents, consult factory about modifications.

\$ 9657.-

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