



HV^{HT} SERIES Standard Option Descriptions

Electrical Supply Options

Available operating voltage configurations for HV^{HT} Series ovens are as follows: (+/-10%) 220V, 400V, and 480V (Other Special Requests Considered)

Common Options

BC/SM –1 Board Counting / SMEMA Interface for single rail and belt only versions

This option incorporates onload and offload end photo sensors for board counting. In conjunction with a go/no-go relay (which triggers based on board count and machine ready/not-ready status) the system ensures safe board handling in pass-through production lines. SMEMA-approved connectors are used at each end of the oven to connect to adjacent equipment.

BC/SM –2 Board Counting / SMEMA Interface for dual rail

This option incorporates onload and offload end photo sensors for board counting in each lane. In conjunction with a go/no-go relay (which triggers based on board count and machine ready/not-ready status) the system ensures safe board handling in pass-through production lines. SMEMA-approved connectors are used.

LT-3 3 or 4-Color, Status Light Tower Options

The 3-color version is standard and this option incorporates a green-amber-red signal tower (mounted above head level), which enables visual indication of machine operating status. The 4-color version incorporates a green-amber-red-white signal tower.

Conveyor Options

The base configuration of all HV+ Series ovens is belt-only. And, the standard “flat flex” conveyor belt has a total width of 20 inches / 460 mm. The belt has a 0.50-inch pitch and uses Stainless Steel wire. Other variations, such as edge-rail only (single or multiple track), rail/cable or rail/belt combination versions are available as options.

FF-24 24 inch Wide Flat Flex Belt Option:

24 inch (609 mm) Wide Flat Flex Belt (.50" pitch SS) Replaces Standard 20 inch (508 mm) Wide Belt

BW-18 Balance Weave Belt, 18” (460 mm) Wide Option

In contrast to the standard open “flat flex” belt material, balanced weave belting incorporates a tight “v-weave” mesh construction that is excellent for belt-based Chip Scale/BGA ball reflow applications or Semiconductor Processing. This is also a good belt option for processing small or odd shaped PCBs.

BW-24 Balance Weave Belt, 24” Wide Option

Same tight “v-weave” mesh belt as above but 24 inches (610 mm) wide.

RB-1 Single – Track 2” – 18” (50-460mm) Board Width, Rail/Belt Combination Conveyor

Single-track rail conveyors have a width adjustment range of 2-18 inches/50 – 460 mm. Capture length of chain pins is 0.197-inch/5 mm. The moving rail is manually actuated, motor driven. A 20 inch wide Stainless Steel wire belt is also installed which runs underneath the Rail Conveyor. Rail extrusions are hard-coat anodized. **NOTE:** UNLESS OTHERWISE SPECIFIED AT RECEIPT OF ORDER, THE FRONT RAIL WILL BE FIXED.

RO-1 Rail Only Conveyor 2" – 18" (50-460mm) Board Width

Same as RB-1 (above), but without a secondary wire belt. Order this option with cable options. Single-track rail conveyor that has a width adjustment range of 2-18 inches/50 – 460 mm. Capture length of chain pins is 0.197-inch/5 mm. The moving rail is manually power-adjustable. **NOTE: UNLESS OTHERWISE SPECIFIED AT RECEIPT OF ORDER, THE FRONT RAIL WILL BE FIXED.**

RO-2 Dual-Track, Rail Only Conveyor Transport

The intent of this option is to enable the doubling of an oven's production capacity without any corresponding increase in oven length. With 4-rail versions, *both rails can simultaneously handle* 10-inches/25.4 cm substrates. With 3-rail versions this increases to 11.250-inches/28.6 cm. Adjustment of both moving rails is simultaneous.

RB-2: Dual-Track, Rail/Belt Combination Conveyor Transport

The intent of this option is to enable the doubling of an oven's production capacity without any corresponding increase in oven length. With 4-rail versions, *both rails can simultaneously handle* 10-inches/25.4 cm substrates. With 3-rail versions this increases to 11.250-inches/28.6 cm. Adjustment of both moving rails is simultaneous. In addition to the primary dual track rail conveyor, a secondary 24-inch/610 mm wide "flat flex" conveyor belt is included (unless the cable board support option is ordered). **NOTE: Consult factory regarding availability of 3-rail configurations.**

UBS-1 Cable Under Board Support for Single-Track Rail Conveyor System

This option is designed to minimize heat-induced "sagging" of thin, panelized PCB's during thermal processing. The use of a moving, Stainless Bead Chain eliminates the problems of traditional "cable or chain-on-extrusion" designs - oil contamination of the product. Also, the low-mass SS Bead Chain .125" (3.175 mm) diameter, does not impact to the product heating profile. The board is supported throughout the entire heater cavity. Additional cable supports are added between reflow and cooling on ovens longer than HVN^{HT}102 so the board is held especially flat during reflow and cooling.

Motion of the cable is synchronized along with the edge conveyor. Vertical and horizontal position is manually adjusted. Typical Bead Chain life is 6-12 months and catastrophic failure of the cable (e.g., through snapping) cannot occur since required tension is zero. With the cable lowered, the entire cable system can be retracted below, and outside the conveyor rails. Unlike competitive systems, the minimum width of the conveyor is not affected with the under board support option installed.

NOTE 1: A belt conveyor cannot be purchase along with this option.

UBS-2 Cable Under Board Support for Dual-Track Rail Conveyor System

This feature performs as described above. However, an additional Bead Chain is included. This option is primarily intended for high volume, "3-across", panelized manufacturing. Consult factory for spacing specifications.

NOTE 1: As mentioned in the previous option, a belt conveyor cannot be purchased in conjunction with this option and this option.

R-L Right to Left Conveyor Direction

This option is meant for applications where the line product flow is Right to Left. The controls and entrance end of the oven are now on the right hand side of the oven as you face the length of the oven. **NOTE: UNLESS OTHERWISE SPECIFIED AT RECEIPT OF ORDER, THE FRONT RAIL WILL BE FIXED.**

RRF: Rear Rail Fixed

This option is required if your line justifies board position by the back rail. Also, if you should want a "left to right" oven but temporarily want to run the oven "right to left", you can order back rail fixed and turn the oven 180 degrees to meet your application.

EW-22 Extra Wide, 22" (560mm) Board Width on Rails

With this option, the conveyor rails are adjusted to accommodate a maximum board width of 22 inches.

EW-24 Extra Wide, 24" (610mm) Board Width on Rails

With this option, the heat tunnel and conveyor rail system are modified to accommodate a maximum board width of 24 inches.

Width Adjust Options

MCA Motorized Conveyor With Adjust

Included as standard with all rail configured ovens. A rotary switch controls the motor direction to move the adjustable rail in or out for appropriate product width.

CCA Computerized Width Adjustment

This option enables automatic, closed-loop positioning of the moving rail via the computer control system. Set and actual rail width are displayed on the computer screen. Rail width settings are stored in associated profile recipes. Adjustment resolution is 0.02-inch/0.051 cm. Adjustment range for single-track rail versions is 3-18 inches/7.62-45.7 cm. Manual power rail adjustment is also included (as a backup system).

HC Hand-Crank, Manual Width Adjust

A hand crank replaces the rotary switch and motor.

Chain Lubrication Options

CL-2 Flow-adjustable, Gravity Feed Chain Oilers (for Single lane, 2 rail, configurations)

This option enables lubrication of the transport chain. The option includes a "clear" dispenser/reservoir unit (one per rail at the onload end) that incorporates a needle valve to control lubrication rate. **NOTE:** A "Conceptronic-approved" synthetic, high temperature chain lubricant must be used in conjunction with this option (consult factory).

ACL-2 Software Controlled, Pump driven Oilers (for Single lane, 2 rail, configurations)

This option performs the same general function as the option above. However, this motorized system incorporates a larger oil reservoir, a "low lubricant level" audible alarm and an adjustable pumping system. Both "pulse interval" and "pulse duration" are fully controllable. **NOTE:** A "Conceptronic-approved" synthetic, high temperature chain lubricant must be used in conjunction with this option (consult factory).

CL-4 Flow-adjustable, Gravity Feed Chain Oilers (for Dual lane, 4 rail, configurations)

This option enables lubrication of the transport chain. The option includes a "clear" dispenser/reservoir unit (one per rail at the onload end) that incorporates a needle valve to control lubrication rate. **NOTE:** A "Conceptronic-approved" synthetic, high temperature chain lubricant must be used in conjunction with this option (consult factory).

ACL-4 Software Controlled, Pump driven Oilers (for Dual lane, 4 rail, configurations)

This option performs the same general function as the option above. However, this motorized system incorporates a larger oil reservoir, a "low lubricant level" audible alarm and an adjustable pumping system. Both "pulse interval" and "pulse duration" are fully controllable. **NOTE:** A "Conceptronic-approved" synthetic, high temperature chain lubricant must be used in conjunction with this option (consult factory).

Atmosphere Options (HV^{HT} Series versions):

With all HV^{HT} ovens, the generic HV^{HT} Series model prefix designation goes from HVA^{HT} (which indicates an air-only system) to "HVN^{HT}". This option includes the following features capabilities not incorporated in air-only "HVA" ovens:

- Proprietary negative pressure blower shaft seals and specialized process chamber gasketing.
- A computerized valve for automatic mode switching between air and nitrogen atmospheres.
- Storage of atmosphere mode selection within individual oven profile "recipes".
- Closed-loop integrated water cooling, upper and lower zones.
- Vertical curtains at each end of the oven for oxygen contamination control.
- Five process-level gas sample lines located throughout the interior of the heating chamber. (Source, First Zone, Middle Zone, Last Zone, and Cooling)
- A lockable cabinet (with clear view port) for flow meters and sample port connections.
- A nitrogen safety shutoff system that stops nitrogen flow when bonnet is raised or when power is lost.
- Operation at continuous maximum blower speeds (maximum convective efficiency) when in nitrogen or air atmospheres.

Atmosphere Monitoring (HVN^{HT} Series Only):

O2SP-XX Additional Oxygen Sample Ports

Five sample ports come with the nitrogen option: source, first heat zone, middle heat zone, reflow zone, and cooling zone. Additional ports can be added where necessary.

SA02 Stand Alone Oxygen Analyzer

With this option, the analyzer is fully mobile, thus, a "stand alone" unit. The customer is responsible to connect the instrument to the oven sample ports. This must be done using a thin wall (0.125-inch/0.3175 cm outside diameter) stainless steel tube not greater than 6-feet/182.9 cm in length. The customer must also add two, female "gas-tight" fittings at each end of the tube. Consult factory regarding oxygen analyzer choices and pricing.

MM02-1 Machine Mounted Oxygen Analyzer

An oxygen analyzer integrated in the machine monitors oxygen levels when nitrogen is selected as a process atmosphere. The machine is only in "Ready" status if oxygen levels are within customer selected process limits. Unless specified, the reflow zone is monitored.

MMDF02-5 Integrated Delta-F Electrolyte Cell O₂ Analyzer Monitoring 5 sample ports

A Delta-F brand electrolyte-based cell oxygen analyzer integrated in the machine monitors oxygen levels when nitrogen is selected as a process atmosphere. A single analyzer monitors 5 sample ports by sampling each one sequentially. Purity limits, purge time, and sample time are programmable. The machine is only in "Ready" status if all oxygen levels are within customer selected process limits. Monitors Source, First Zone, Middle Zone, Last Zone, and cooling with 5 independent Setpoints and Software feedback tied to Alarm conditions.

Atmosphere Control (HVN^{HT} Series Only):

CL-N2 Closed Loop Nitrogen Control

(Note: This option requires purchase of MMO2-1.) This option increases nitrogen flow when actual PPM level is above setpoint to minimize Purge Time. It also decreases nitrogen flow when the PPM level is below setpoint to minimize Nitrogen consumption. This does not affect the reflow profile.

IDLE Energy saving Feature

(Note: This option requires purchase of Board Counting / SMEMA option to work in conjunction with this option.) This option reduces Power and Nitrogen consumption when the Board counters have not seen a PCB in a preset time. The user sets this time in software limits.

Water Cooling Options (HVN^{HT} Series Only):

All HVN^{HT} ovens include a closed-loop integrated water-cooling system recirculating water through the upper and lower zones. Other options can be chosen.

CS-W Customer Supplied Water

Rather than the integrated water cooling system, an inlet and outlet is provided with automatic shut-off solenoids.

RF-W Refrigerated Water Supply

A CFC Free active chiller supplies chilled water to a closed-loop system. This chiller is powered and controlled by the oven (on/off), but is not incorporated inside the oven panels. This option requires additional floor space.

CL-M Cooling Monitoring

Thermocouples in cooling monitor process temperature and inlet water temperature and alarm if outside process limits. This option replaces the onboard temperature profiling thermocouples. They are not available together.

CL-CL Temperature Controlled, Closed Loop Cooling

An additional closed loop temperature zone in cooling controls the cooling zone to a setpoint temperature for tight process control. This option includes a CFC Free active chiller to supply chilled water to a closed-loop system.

Blower Control and Monitoring:

BSC-M Cooling Blower Speed Control

Master Blower Speed Control for all Cooling Zones to be set to one of five pre-selected speeds. This controls the cooling ramp rate to optimize liquidus time without thermal shock.

BSH-M Heat Zone Blower Speed Control

Master Blower Speed Control for all Heating Zones to be set to one of five pre-selected speeds. This option is a possibility for Flex Circuit or Semiconductor Solder Ball applications.

BS-M5 Master Blower Speed Control for Preheat, Dryout, Reflow, and 2 Cooling Zones

Master Blower Speed Control with five settings each for independent selection of each portion of profile. This option allows software selection of blower speed varying the speed from 20 – 100%.

BF-A Blower Failure Alarm

This option has independent pressure sensors for each Blower Motor, up to 28 sensors, which will provide a Blower Failure Alarm and indicate the exact fan that has failed if any blower motor fails to generate airflow.

BSC-XX Closed Loop Blower Speed Control

Up to 28 fans are individually controlled to a recipe-selected pressure setpoint. This option includes Blower Failure alarms.

Miscellaneous Options:

HT-2 High Temperature capability to 350 C for last 2 Reflow Zones

Modifications are done to heat zone hardware and software enabling 350 C Zone temperature capability.

HT-XX High Temperature capability to 350 C in all Heat Zones

Modifications are done to all heat zone hardware and software enabling 350 C Zone temperature capability. This is currently available on belt only machines. (Note: XX indicates the number of zones with a setpoint greater than 300°C.)

CHT-XX Custom High Temperature capability for the last 2 Reflow Zones

Conceptronic will customize the heat tunnel to be able to have setpoints up to 400°C per customer's choice at time of order. This option is currently available on belt only machines, or specially priced configured rail machines. (Note: XX indicates the number of zones with a setpoint greater than 350°C.)

CSS Computerized Start/Stop

This feature enables the programmed startup and shutdown of the oven through system software. The operator can program multiple startup and shutdown events in a variety of combinations on different days, weeks and/or months.

ECM Extended Cooling Module

An extra top cooling zone, 9 inches of cooling, is added above the off-load of the oven. This cooling zone uses blower assisted room air blown at 75 cubic feet per minute (2.1 cubic meters per minute) through a faceplate. This cooling zone can be manually lifted or will lift with the rest of the bonnet.

SLC Safety Light Curtain

This feature provides a light curtain along the front, operator side of the oven and in front of the hinged bonnet. If the light beam (i.e., "curtain") is broken during the lowering of the bonnet, then power to the hood lift/lower system is cut-off and the bonnet will not close.

KCS Key Interlocked Operator Control Switches

This option requires the use of keys to operate the manual rail adjustment and bonnet lift operations. The use of keys can control who makes adjustments and the possibility of inadvertent adjustment of the power rail or lifting of the bonnet during operation. (NOTE: Access to the electrical panels of the oven require a special key as standard.)

ECS Electrical Cabinet Safety Interlock Switches

With this option, special safety switches are mounted on all externally removable panels and will disengage all power to the oven should an access door be opened during operation. For authorized maintenance each switch has a third, "bypass" position. When the "bypass" position is used, power is maintained to the system when access doors are opened. The switches automatically re-set for their normal safety function once the doors are closed.

CE CE Mark Compliance Package: This option is required on all machines for use in Europe. This upgrade package is designed to enhance the oven's electrical and mechanical systems to conform to the stringent requirements defined by current CE Mark specifications. A certification-of-compliance document is provided.

RC 360 degree Rotating Casters: This feature makes final positioning of an oven much simpler. Specially designed casters are positioned along the machine's base frame for proper weight distribution and to protect conductive tile floors. Leveling feet are also included for final machine height adjustment.

SPA-A Spare Parts Kit A

Please contact the factory for parts that are included in the kit.

SPA-B Spare Parts Kit B

Please contact the factory for parts that are included in the kit.

CC Custom Colors

Only single or two-tone combinations are allowed. For two-tone color schemes, darkest color will be used around onload and offload assemblies. A color match chip is required at receipt of order to eliminate the potential for color match errors or shipment delays.

EW-2 Extended 2 year warranty

This option lets you purchase a second year to the 1 year "bumper to bumper" warranty on all other parts to the Conceptronic warranty policy.

Packaging, Installation, and Warranty

NA-1 North America Packaging, Installation, and Warranty

This option is mandatory for all North American customers. It includes the shipping skid and moisture resistant packing of the oven for Air-Ride Van transport, arranged by the customer, startup by Conceptronic Service personnel with operator and maintenance training, and warranty of the oven. The warranty is:

- 5 year Warranty on Heaters
- 3 year Warranty on Blower Motors
- 1 Year "Bumper to Bumper" Warranty on all other parts

INT-1: International Packaging, Installation, and Warranty

This option is mandatory for all International Customers. It includes the shipping pallet and moisture sealed packaging for Dedicated Sea Containers, startup and training by local Conceptronic Distributor, and warranty of the oven. This is not a full crate. The warranty is:

- 5 year Warranty on Heaters
- 3 year Warranty on Blower Motors
- 1 Year "Bumper to Bumper" Warranty on all other parts

FC-3 Full Crate with Moisture Sealed Packaging

For those customers who are going to Air Freight their oven or use non-Dedicated Sea Containers, Conceptronic can provide a complete crate with the oven "bagged" for moisture sealing.

Third Party Profilers:

These units are microprocessor-based, temperature vs. time data acquisition units (with custom software) that are ideal for detailed PCB thermal profiling. The data acquisition units for all systems include a temperature-resistant heat shield for passage through the oven. With any unit, the user is able to both run a profile and then download resulting time vs. temperature data through the oven's computer control system WHILE THE OVEN IS IN OPERATION. A serial com port, or a USB port, is provided as part of the computer controlled system.

SL-C9 SlimKic 2000 Dual Kit (9 channel)

This unit can accommodate up to 9 thermocouples.

SL-C12: SlimKIC 2000 Dual Kit (12 channel)

This unit can accommodate up to 12 thermocouples.

DPE: Data PAQ Reflow Tracker System

This unit can accommodate up to 6 thermocouples.

SMG: Super MOLE Gold Deluxe

This unit can accommodate up to 6 thermocouples.

KIC-24/7: KIC 24/7 Thermal Management System

A monitoring, SPC charting, analysis, documentation, and production trace ability system. Like the previous Prophet System, independent thermocouple probes are installed in the oven along with other KIC hardware and software.

NOTE: Conceptronic does not manufacture KIC, Datapaq or ECD profilers. They are distributed for customer convenience. **CONCEPTRONIC SHALL NOT BE RESPONSIBLE FOR WARRANTY AND SERVICE OF THESE DEVICES. THIS SHALL BE THE SOLE RESPONSIBILITY OF THE ORIGINAL EQUIPMENT MANUFACTURER.**