

ADVANCED INTEGRATED VACUUM OVEN WITH DIRECT VACUUM CONTROL



Advanced Integrated Vacuum Oven with Direct Vacuum Control — ToronOVEN™ V-IPS Series

ToronOVEN™ V-IPS is the advanced configuration of the integrated vacuum oven lineup, adding direct vacuum degree display and control, an arc-angle stainless steel interior chamber design, and an LCD microcomputer control system to the core integrated pump platform. Like the ToronOVEN™ V-IP, this series houses a standard vacuum pump inside a built-in noise-reducing cabinet — delivering a self-contained vacuum oven system with no external pump or vacuum lines required. The S-tier upgrade adds the ability to monitor and directly control vacuum level from the front panel, a capability the standard V-IP series does not include.

Available in five chamber volumes (30 L, 53 L, 100 L, 250 L, and 500 L) the ToronOVEN™ V-IPS covers the same capacity range as the V-IP while adding features that matter for regulated, high-precision, or process-controlled vacuum drying applications. The arc-angle interior chamber design eliminates the sharp internal corners present in standard rectangular chambers, making cleaning faster and more thorough — a practical advantage in pharmaceutical, food science, and regulated manufacturing environments where cross-contamination between runs must be minimized.

Each heating shelf operates as an independent temperature zone with its own controller and LCD display dashboard. Direct vacuum degree display and control allows operators to set, monitor, and actively manage chamber vacuum level as a process parameter — not just as a pass/fail condition. This level of vacuum control distinguishes the ToronOVEN™ V-IPS from both standard vacuum ovens and conventional drying ovens in applications where vacuum level is a defined process variable that must be controlled and documented alongside temperature. An optional intelligent touchscreen controller and oil filter are available as accessories.

ToronOVEN™ V-IP vsToronOVEN™ V-IPS differentiation summary

Feature	ToronOVEN™ V-IP	ToronOVEN™ V-IPS
Display	Basic	LCD
Vacuum control	Analog gauge only	Direct display and control

Feature	ToronOVEN™ V-IP	ToronOVEN™ V-IPS
Interior corners	Standard	Arc-angle (easier cleaning)
Optional touchscreen	No	Yes
Oil filter option	Yes	Yes

APPLICATIONS

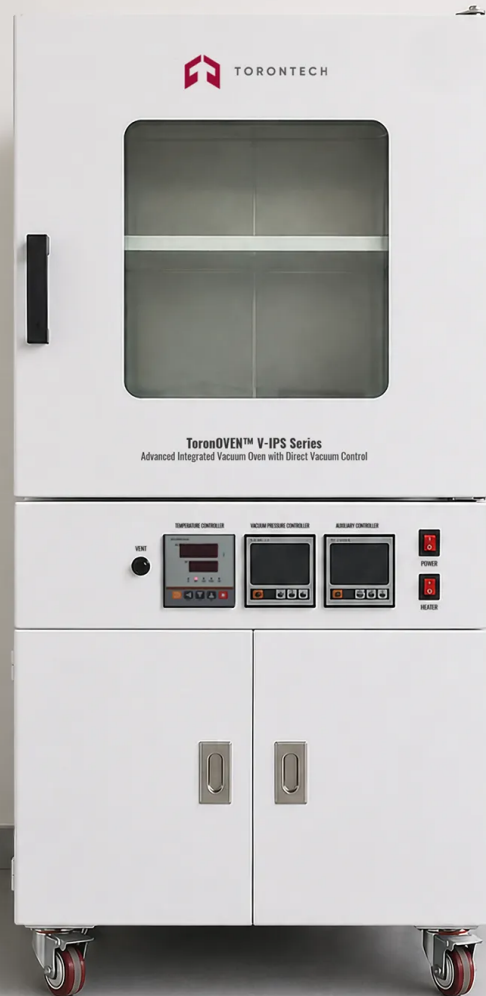
Advanced Integrated Vacuum Oven with Direct Vacuum Control — ToronOVEN™ V-IPS Series Applications

The ToronOVEN™ V-IPS serves regulated laboratory, pharmaceutical, food science, and industrial environments where direct vacuum control, clean interior construction, and advanced process documentation are required alongside multi-zone independent shelf temperature management:

- Regulated Pharmaceutical Drying: vacuum drying of APIs, granules, and dosage form intermediates where vacuum level is a defined process parameter subject to validation and documentation requirements, not just a background condition
- Multi-Product Simultaneous Processing: independent shelf temperature zones allow simultaneous vacuum drying of different products or formulations requiring different thermal setpoints within the same evacuated chamber
- Clean Laboratory Vacuum Processing: the arc-angle interior design supports thorough post-run cleaning between product batches in pharmaceutical QC, food safety, and regulated analytical laboratory environments
- Degassing and Controlled Atmosphere Processing: direct vacuum degree control supports protocols where specific intermediate vacuum levels are required during ramp-up or hold phases, beyond simple maximum-vacuum operation
- Electronics and Advanced Materials: low-temperature vacuum drying, outgassing, and thermal conditioning of sensitive electronic components and advanced material samples where both temperature and vacuum level need independent

control

- Food Science and Analytical Chemistry: moisture content determination, loss-on-drying, and vacuum thermal processing where arc-angle interior construction simplifies cleaning between sample types
- Industrial Manufacturing QC: large-volume vacuum conditioning and process drying in production environments where the 250 L and 500 L models provide the throughput that benchtop drying oven or standard vacuum oven configurations cannot deliver
- Research and Development: advanced general-purpose vacuum oven applications requiring direct vacuum process control and the option to upgrade to intelligent touchscreen operation



FEATURES

Advanced Integrated Vacuum Oven with Direct Vacuum Control — ToronOVEN™ V-IPS Series Key Features

Direct Vacuum Degree Display and Control

- Vacuum degree actively displayed and directly controllable as a process parameter from the front panel
- Supports protocols requiring specific intermediate vacuum levels, controlled ramp rates, or documented vacuum conditions throughout the drying cycle
- Analog vacuum gauge provides additional real-time visual confirmation of chamber pressure

Advanced Interior Chamber Design

- Arc-angle stainless steel interior chamber with rounded internal corners for faster, more thorough post-run cleaning
- Cold-rolling steel exterior with static spray plastic finish for durable, corrosion-resistant external surfaces
- Eliminates residue accumulation zones at internal corners — practical advantage in pharmaceutical, food science, and regulated manufacturing environments

Independent Multi-Zone Shelf Temperature Control

- Each heating shelf operates as an independent temperature zone with dedicated microcomputer controller
- LCD display per shelf zone for clear independent readout of setpoint and measured temperature
- Simultaneous processing of samples at different temperatures on separate shelves within a single evacuated chamber

Integrated Vacuum System

- Standard vacuum pump housed inside a built-in noise-reducing cabinet — self-contained, no external pump or vacuum lines required
- Vacuum degree: 133 Pa across all five models
- Factory-matched pump-to-chamber configuration for consistent vacuum performance from first use

Control System and Timer

- LCD microcomputer control system with temperature, time, and over-temperature alarm functions per shelf zone
- Programmable timer: 0-9999 minutes for flexible short-cycle and extended vacuum processing programs
- Power recovery function retains all active setpoints, vacuum parameters, and timer states after power interruption or system halt

Chamber and Door Design

- Toughened, bulletproof double glass door window for visual sample monitoring without venting
- Adjustable door with silicone rubber perimeter seal for consistent vacuum integrity
- 1 shelf standard (30 L); 2 shelves standard (53 L and 100 L); 3 shelves standard (250 L); 4 shelves standard (500 L)

Optional Add-Ons

- Oil filter for pump protection in solvent-heavy vacuum drying applications
- Intelligent touchscreen controller for upgraded interface and enhanced process control capability

THEORY & METHOD

Theory and Method

Direct Vacuum Degree Display and Control

The defining upgrade of the ToronOVEN™ V-IPS over the standard V-IP series is the ability to display and directly control chamber vacuum degree from the front panel. On the standard V-IP, vacuum is applied and the operator monitors pressure via the analog vacuum gauge. The V-IPS adds active vacuum level management — operators set a target vacuum degree as a process parameter, and the system monitors and controls vacuum level to maintain the setpoint throughout the run. This is particularly relevant for protocols where a specific intermediate vacuum level is required during dwell phases, or where vacuum ramp rate needs to be controlled to avoid sample disruption during rapid pressure reduction.

Direct vacuum degree display also enables real-time process documentation of vacuum conditions alongside temperature data — a requirement in pharmaceutical process validation, GMP manufacturing, and any regulated vacuum drying application where the vacuum level at each phase of the drying cycle must be recorded and traceable.

Arc-Angle Interior Chamber Design

The ToronOVEN™ V-IPS interior working chamber uses stainless steel construction with arc-angle corner design — rounded internal corners replace the sharp 90-degree angles present in standard rectangular chamber interiors. This design change has a direct practical benefit in laboratory environments where chamber cleaning between runs is a compliance or contamination control requirement. Rounded corners eliminate the residue accumulation zones that form at sharp internal corners during vacuum drying cycles, reducing cleaning time and improving the thoroughness of wipe-down or wash procedures between product batches or sample types.

LCD Microcomputer Control and Independent Shelf Zones

The ToronOVEN™ V-IPS uses an LCD microcomputer control system — an upgrade from the basic display configurations on entry-level vacuum ovens — providing clearer parameter readout across both temperature and vacuum process variables. Each heating shelf operates as an independent temperature control zone with its own dedicated controller and front-panel LCD dashboard, enabling simultaneous processing of samples at different thermal setpoints on separate shelves within the same evacuated chamber. Temperature fluctuation is held to $\pm 1^{\circ}\text{C}$ across all models. An over-temperature alarm activates per shelf zone when the measured temperature exceeds the programmed threshold.

Integrated Pump System and Chamber Integrity

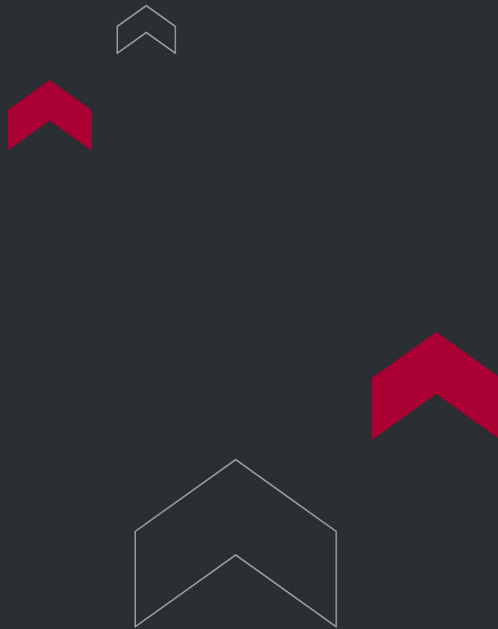
The vacuum pump is housed within a built-in noise-reducing cabinet in the instrument base — the same integrated architecture as the V-IP series. This self-contained design achieves 133 Pa vacuum degree without external pump equipment, external vacuum lines, or additional floor space. The door uses an adjustable silicone rubber perimeter seal on a toughened, bulletproof double glass door with adjustable door mechanism, maintaining chamber vacuum integrity over the service life of the unit. A power recovery function retains all active setpoints, vacuum parameters, and timer states following any power interruption.

TECHNICAL SPECIFICATIONS

Advanced Integrated Vacuum Oven with Direct Vacuum Control —
ToronOVEN™ V-IPS Series Technical Specifications

Parameter	ToronOVEN™ V-30IPS	ToronOVEN™ V-53IPS	ToronOVEN™ V-100IPS	ToronOVEN™ V-250IPS	ToronOVEN™ V-500IPS
Chamber Volume (L)	30	53	100	250	500
Temp. Range (°C)	RT+10 to 250				
Temp. Fluctuation (°C)	±1				
Vacuum Degree (Pa)	133				
Rated Power (W)	450	1200	1400	2800	4000
Voltage	220V ±10V, 50/60 Hz (110V is also available)				380V ±10V, 50 Hz
Timer Range (min)	0-9999				
Internal Dimensions W×D×H (mm)	320×320×300	415×370×345	450×500×450	600×600×700	630×810×845

Parameter	ToronOVEN™ V-30IPS	ToronOVEN™ V-53IPS	ToronOVEN™ V-100IPS	ToronOVEN™ V-250IPS	ToronOVEN™ V-500IPS
External Dimensions W×D×H (mm)	480×530×1015	575×550×1060	620×640×1165	770×780×1515	800×990×1660
Number of Shelves	1	2	2	3	4
Net Weight (kg)	84	109	129	228	442
Gross Weight (kg)	98	122	148	251	475
Package Size (mm)	610×580×1240	685×645×1275	720×775×1420	870×880×1650	1090×970×2060



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