

# LOW TEMPERATURE

## LT-36VL Low Temperature Chamber Constant Defrost Temperature



**Applications** The LT-36VL plant growth chamber offers you the ability to measure cold hardiness, freeze tolerance, heat stress, and exposure to a series of temperatures (spring, summer, fall and winter-like conditions). “Constant temperature defrost” allows the chamber to operate at low temperature under full lighting without temperature defrost spikes. The glass side walls give a full view of each shelf without disturbing your experiment, and the glass is evenly heated over its entire surface to eliminate condensation.

**Controller** Percival’s Intellus Ultra controller is capable of controlling temperature, humidity, CO<sub>2</sub> and lighting. The Intellus Ultra Control System is a single-board electronic solid-state design which includes a 10 key membrane keypad with LED indicators and a vacuum fluorescent display. Programs may be configured to run in real time or countdown (circadian) mode. Ramping and non-ramping program methods are available for each programming mode. Multiple programs can be linked to create complex environmental profiles. The Intellus Web Server (optional) allows for monitoring and controlling of the chamber via a web browser (requires Internet Explorer 6.0 +). This option allows for remote monitoring and programming of your chamber including alerts and current condition updates for up to five e-mail addresses. Please refer to [www.percival-scientific.com](http://www.percival-scientific.com) for additional information regarding the control system.

**Lighting System** Two externally mounted lampbanks (F32T8/741 fluorescent) reduce interior heat load while eliminating the needs to open the chamber to remove shelves when changing light bulbs. The externally mounted lamp banks are separated from the chamber growth space by a glass side wall. The glass is evenly heated over its entire surface to eliminate condensation. Intensity is adjustable up to 300  $\mu\text{moles}/\text{m}^2/\text{s}$  of light irradiance measured @ 6” from the lamps. Programming and control of the lighting is done via Intellus real time controller. There are two levels of programming of fluorescent lighting. There is no light intensity drop-off due to low temperature.

Temp Range (with all lights on)	Interior Space (volume)		Work Area		Maximum Growing Height		Exterior Dimensions in. (cm)			Light Intensity (6” from lamps unless otherwise noted) $\mu\text{moles}/\text{m}^2/\text{s}$	# of Tiers
	° C	ft <sup>3</sup>	m <sup>3</sup>	ft <sup>2</sup>	m <sup>2</sup>	in.	cm	(W)	(D)		
-10 to 44±0.5	29.6	.84	10.9	1.02	*	*	42.5(107.9)	34(86.36)	77(195.6)	300	2

\* Growing Height: 24” per tier or 48” with one shelf.

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**Cabinet Construction** 22-gauge interior and 18-gauge exterior electro-zinc plated steel construction. All seams and joints on the outer and inner shells are welded. Inner shell is supported by a non-compressing and non-thermal conducting material to lock the inner liner in place without a metal-to-metal bond to the outer case. Each side wall has an evenly heated glass with viewing dimensions of 49" x 21 1/2". The lamp banks are externally mounted on each side wall. If enough room is allowed on the side of the chamber, the lamp banks swing just like a door allowing full view of each shelf without disturbing the experiment. Allow clearance when replacing bulbs.

**Insulation** Woodless construction using CFC free insulation. Overall wall thickness is 2" (5.1cm), ample insulation for maintenance of stated temperature range.

**Door** One door opening 29 3/16" x 57 1/2" (74 cm x 146 cm) provides full access to the chamber interior. A magnetic gasket provides a tight seal to door frame.

**Interior Space** 29.6 ft<sup>3</sup> (0.84 m<sup>3</sup>) with a work area 10.9 ft<sup>2</sup> (1.02 m<sup>2</sup>) provided on two tiers.

**Shelving** Two tiers of white epoxy coated wire shelving. Each shelf is 27" D x 28 3/4" W (68.6 cm x 73 cm). Shelves are vertically adjustable in 1/2" increments.

**Finish** Interior and exterior painted with highly reflective, environmentally friendly, high temperature baked white powder coating.

**Refrigeration** Constant temperature defrost: allows chamber to operate at low temperature under full lighting without temperature defrost spikes. Typically low temperature systems are defrosted by the diversion of hot gas through the coil or via electric heaters, but this causes a significant temperature spike during the defrost period. In order to maintain a constant low temperature within this chamber, a dual coil system has been utilized. Both coils work in tandem with a damper system. As one coil is cooling, the other coil is defrosted via hot gas. An air flow damper switches with the coils to prevent the coil being defrosted from putting its heat into the system. The coil being defrosted is essentially closed off from the rest of the system. Self-contained air-cooled condensing unit with hot gas bypass system for continuous compressor operation, extended life and close temperature control. This continuous running condensing unit

provides precise temperature control and provides defrost of cooling coils via hot gas with out the need of electric heaters. Optional outdoor all weather air-cooled condensing unit or self contained water-cooled condensing unit available upon request. Refrigerant is HCFC-22 (R-22) which is CFC free. Others available upon request such as HFC-134a (R-134a). Note: chamber temperature range may change when selecting other refrigerants.

**Temperature Range** -10° to 44° C lights on ( $\pm 0.5^\circ$  C) and -15° to 44° C lights off ( $\pm 0.5^\circ$  C). This chamber gives you greater temperature uniformity, and allows for lower temperature limit under full lighting.

**Temperature Safety Limit Controls** (Experiment Protection) Adjustable high and low temperature controls, audible alarms and visual indicators are provided. The controls shutdown all the power to the chamber, and activates alarms. When the temperature returns to the normal range the system will automatically reset.

**Options (most popular)** Advanced Intellus Control System (C9), Communications Software (C9+), Advanced Intellus with Touchscreen and Internet capabilities (C10), CO<sub>2</sub> enrichment package, self-contained water-cooled condensing unit, dry alarm contacts (S2), dimmable lighting (closed loop with PAR light sensor)(Q22), dimmable lighting (open loop control)(Q23), extended temperature ranges available. See other catalog sheets or consult factory for additional accessories.

**Convenience Receptacles** Two unswitched outlets provided.

**Electrical Service Requirements** 115/1/60 - two grounded cords and plugs provided - (1) 8 amp cord (1) 10 amp cord.



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