

LOW TEMPERATURE

LT-105 Low Temperature Chamber Constant Defrost Temperature



Applications The LT-105 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.

Controller Percival’s Intellus Ultra controller is capable of controlling temperature, humidity, CO2 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 for additional information regarding the control system.

Lighting System Counter-balanced lamp bank is adjustable for optimizing light intensities. The light fixtures yield up to 980 $\mu\text{moles}/\text{m}^2/\text{s}$ @ 6” from the lamps. The lamp provides a balanced spectrum for plant growth using sixteen F72T12/CW/VHO 160W fluorescent lamps plus ten 60W incandescent bulbs. Programming and control of the lighting is done via Intellus real time controller. There are two levels of programming of fluorescent lighting and one level of programming of incandescent lighting.

Air Flow Conditioned air moves in a uniform upward direction through the entire work bench through perforations in the aluminum channels. Fresh air inlet and outlet are adjustable.

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 ³	m ³	ft ²	m ²	in.	cm	(W)	(D)		
0-44±0.5	76.4	2.2	16.1	1.5	57	142.2	117 (297.2)	37.1 (94.2)	77.2(196.1)	980	1

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Cabinet Construction Interior and exterior are constructed of 22-gauge electro-zinc plated steel with the exception of the interior floor, which is stainless steel, and the work bench which is perforated aluminum channel. Inner shell is supported by a thermal conducting insulator that locks the inner liner in place without a metal-to-metal bond to the outer case. Chamber floor is equipped with a floor drain with attached 3/4" plastic tubing. The chamber cabinet is attached to an angle frame base which contains heavy duty swivel casters.

Insulation Woodless construction using foam-in-place 2" thick CFC free urethane insulation foam. This is an environmentally friendly foam with global warming potential (GWP) of 0.0 and ozone depletion potential (ODP) of 0.0.

Doors Two door openings each 26" x 48 1/2" (66 cm x 123.2 cm). A magnetic gasket provides tight seal to door frame.

Interior Space 76.4 ft³ (2.16 m³) with a work area of 16.1 ft² (1.5 m²) provided on one tier.

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 water-cooled condensing unit with hot gas bypass system for continuous compressor operation, extended life and close temperature control. This continuous running condensing unit ensures precise temperature control and provides defrost of cooling coils via hot gas without the need of electric heaters. Optional outdoor all weather air-cooled condens-

ing unit or self contained air-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 -15° - 44° C with all lights off and 0° - 44° C with all lights on (full fresh air) ± 0.5° C within the work area on a horizontal plane with all lights on.

Temperature Safety Limit Controls (Experiment Protection) Adjustable high and low temperature controls, audible alarms, and visual indicators are provided. The controls shut down 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), CO₂ enrichment package, Self-contained air-cooled condensing unit, Remote air-cooled condensing unit, Dry alarm contacts (S2), Closed loop dimmable lighting (Q22), Open loop dimmable lighting (Q23). Extended temperature ranges available. See other catalog sheets or consult factory for additional accessories.

Convenience Receptacles Two convenience receptacles provided inside chamber.

Electrical Service Requirements 120 - 208 VAC/3 phase/60 Hz, 4 wires plus ground - total amp draw for standard chambers without any options is 20 amps/leg. Consult factory for electrical services when adding accessories to the chamber.

Specifications are subject to change



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