

Arabidopsis Chamber MTAC26 Multi Tier Reach In



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Product Overview /Applications

The MTAC26 offers a small footprint and a low overall height which allows the unit to pass through doorways fully assembled. The interior of the cabinet features two shelves and light canopies with a plant height that is suitable for growing low and medium height plants. This makes the MTAC26 an ideal cabinet for growing such species as Arabidopsis from seed to full maturity. Also, the MTAC26 is shipped fully assembled thereby simplifying installation and set-up procedures. Please consult Meditech regarding specific requirements.

Lighting

Standard with the MTAC26 is a closed-loop lighting system (programmed in micromoles) which allows for precise and repeatable control of light output while also automatically adjusting for lumen maintenance. The standard lighting package provides a broad based light spectrum using both fluorescent and incandescent lamps. Standard light intensity is 300 micromoles/m²/s which is measured by a quantum light meter and transmitted to the controller for user readout. Lamp heat is controlled and managed by the refrigeration system.

Airflow

Airflow is distributed horizontally, via a perforated back wall plenum, across each shelf. This helps to establish uniform air distribution throughout the growth area irrespective of plant loading. The unit includes fresh air intake and exhaust ports which are adjustable to allow up to 20 ft³/min (0.57m³/min.) of air exchange.

Refrigeration System

Cooling for the MTAC26 is provided by a self contained, air-cooled condensing unit with a hot-gas bypass system for continuous operation. An electronic modulating valve provides tight temperature control while ensuring quiet operation. Pressure transducers are included for monitoring the status of the refrigeration system. Consult the factory for heat rejection information and other options for cooling

Experiment Protection

User programmable “set and forget” alarms track the chamber’s operation versus user-defined set points. This allows for exceptionally accurate monitoring without the need for adjustment every time the set point is redefined. Backup “high/ low” alarms provide a further level of protection while visual and audible notification is provided when any alarm is activated. Contacts for connection to a building management system are also included.

Key Product Attributes

- 26 square foot growth area over two shelves for low to medium height plants
- Shipped fully assembled – fits through standard doorways
- Precise closed-loop lighting control in micromoles/m²/s
- Product certifications/markings; CE



Performance Data

Temperature Range (°C)	Interior Capacity	Growth Area	Growth Height	Exterior Dimensions (WxDxH)	Light Intensities (6in. from lamp)	Electrical Service	Weight
-2°C to +40°C Lights Off	52ft ³	26ft ²	24"	95" x 35" x 78"	300 µmoles/m ² /s	120-1Ø-60Hz	990lb.
+5°C to +45°C Lights On	1471L	2.4m ²	610mm	2415 x 890 x 1980 (mm)	@ 25°C	220-1Ø-50Hz	449kg

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1.0 Control System: Meditech 7 inch Touch Screen Controller

2.0 Construction: (Note: All dimensions are nominal.)

- 2.1 Exterior Dimensions: 95"W x 35"D x 78"H (2415mmW x 890mmD x 1980mmH)
- 2.2 Interior Dimensions: 65"W x 29"D x 56.5"H (1650mmW x 735mmD x 1435mmH)
- 2.3 Growth Area: 26ft² (2.4m²) on two tiers.
- 2.4 Shelf Capacity: 52ft³ (1471 liters) on two tiers.
- 2.5 Growth Height: 24" (610mm) from floor to lamp bank, for each air shelf.
- 2.6 Cabinet Construction: Bonded panelling using CFC-free insulation.
- 2.7 Exterior Finish: Blue-green enamel baked on patterned aluminum.
- 2.8 Interior Finish: Reflective white enamel baked on smooth aluminum.
- 2.9 Drain Pan: Under each shelf, the drain pan is sloped to a central drain which is connected to an external drain tube. All drain pans are 22 ga. Stainless steel construction.
- 2.10 Condensing Unit Access: Easy access to compressor and refrigeration components through an exterior panel on the end of the chamber.
- 2.11 Doors: Two reach-in doors with keyed magnetic locks, each clear opening 25.75"W x 54"H (655mm x 1375mm). One dual pane observation window with light tight cover provided.
- 2.12 Control Panel: Left hand (right hand model optional).
- 2.13 Instrument Ports: Two ports, 1" (25mm) with light tight caps.
- 2.14 Packaging: Factory assembled, tested and fully crated.

3.0 Lighting:

- 3.1 Intensity1: Up to 300 micromoles/m²/s over each air shelf.
- 3.2 Programming and Control: Fluorescent lamps incorporate dimming ballasts and a quantum light sensor to allow closed loop light control. Automatic adjustment of light intensity within the programmed range of 20% to maximum intensity. Incandescent lamps are controlled in 2 levels.
- 3.3 Lamps: T8 Fluorescent and incandescent lamps.
- 3.4 Lamp Heat: Removed by refrigeration system.
- 3.5 Ballasts: High efficiency electronic and easily accessible.

4.0 Temperature Control:

 (Maximum design ambient temperature is +35°C)

- 4.1 Range: +4°C to +45°C lights OFF, +10°C to +45°C lights ON.
- 4.2 Control 2: ±0.5°C, at control point.
- 4.3 Temperature Safety Limits:

Primary: A programmable min and max temperature limit alarm or a limit tracking alarm that automatically follows the programmed set point.

Secondary: An independent factory-set high and low temperature limit is also provided for increased assurance.

An audible alarm is standard for both limits. Activation of temperature safety limit set points turns off power to the chamber.

1 Average Light measurement at 6" (150mm) from lamp barrier on 6-inch grid, chamber and ambient temperature of 25°C. Light intensities are nominal values measured at the rated chamber supply voltage. (Measured by a LI190 Quantum Sensor).

2 Measured by Precision Thermistors, measured without test materials or optional accessories.



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4.4 Aspirator: Located in the machine compartment to provide a remote location for sensors for accurate controlling and recording, unaffected by lamp radiation.

5.0 Refrigeration:

5.1 Condensing Unit: Cabinet is supplied with an air-cooled hermetically sealed condensing unit with hot gas bypass system for continuous compressor operation, and close temperature control. (Alternative cooling systems available).

5.2 Valve: Electronic modulating valve that smoothly regulates the heating and cooling functions of the chamber.

5.3 Heat Exchanger Coil(s): Copper-tubed construction.

5.4 Refrigerant: Refrigeration system is charged with CFC-free refrigerant.

5.5 Monitoring: a) Refrigeration system operation is monitored by the control system, including visual and audible alarm.

b) Pressure transducers allow for real-time diagnostics for preventative maintenance & repair.

6.0 Air Flow:

6.1 Distribution: Conditioned air is directed horizontally across each growth area by a pressurized perforated rear wall plenum to ensure air flow and temperature uniformity.

6.2 Fresh Air: Filtered inlet and adjustable exhaust to 20ft³/min (0.57m³/min).

7.0 Humidity Control: (Optional)

7.1 Range: No control on basic unit. (Refer to Humidity under Optional Accessories)

8.0 Carbon Dioxide Additive Control: (Optional)

8.1 Range: No control on basic unit. (Refer to Carbon Dioxide Additive Control under Optional Accessories)

9.0 Utility Requirements³: (Rating increases with some options.)

9.1 Electrical Service:

60Hz: 120/208-3Ø-60Hz-4 wire plus ground

50Hz: 220/380-3Ø-50Hz-4 wire plus ground

9.2 Drain: Floor drain must be provided outside footprint of cabinet.

10.0 Installation: (Optional)

10.1 Not included, to be performed by others. Installation is available upon request, please consult factory.

10.2 Should installation or technical support be required thorough Convirons' Technical Service group, additional charges may apply



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OPTIONAL ACCESSORIES

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PROGRAMMING	Can be modified according to customers requirements	
UPS	Uninterrupted Power Supply	Surge protection and uninterrupted power supply, on controller only, for continuous operation of the controller during power interruptions, duration of the UPS is approx. 15 minutes. (Consult factory for increased duration, if required.)
TEMPERATURE	Consult Factory	
HUMIDITY (Based on +21°C and 50% RH ambient condition)		
DHS	Dry Humidity Sensor	Dry Electronic Sensor that directly measures and displays relative humidity in %RH by means of constant display (Not required if ordering additive humidity control option.)
SNH	Spray Nozzle Humidification	Range: Up to 90% RH lights OFF and 85% RH lights ON, limited by a +25°C maximum. Dew point. Additive humidity through use of spray nozzles. Range given in an empty chamber. Chamber may achieve higher levels with plant loading. Programming: See Control System documentation. Control: $\pm 3\%$ RH. System uses a dry humidity sensor to directly measure humidity in %RH (no wet sock). Spray nozzles require a 60 psi (4.2 bar) pressure and must be supplied with clean water to the following specification; pH = 7.0 ± 0.5 , filtration <2 microns (0.00008 in) and resistivity between 0.5 and 1.0 Meg Ohms. Maximum water usage to maintain specified levels is 2 liters/hr. If the above water pressure is not available the CPSNH option is required to supply necessary pressure. Note: When ordered with units requiring temperatures below 4°C, humidity system is provided with a low pressure air clean out system. Low pressure air must be supplied to cabinet (35 psi).
CPSNH	Compact Pump Spray Nozzle Humidification	Compact pump and reservoir for spray nozzles. Order this option with SNH if the minimum 60 psi (4.2 bar) water pressure is not available. Supplies pressurized water for up to 12 nozzles
RES	Reservoir	Pressure reservoir at downstream chambers. Must be ordered for all downstream chambers fed from CPSNH.
BDH	Bypass Dehumidification	A precisely controlled volume of chamber air bypasses the heat exchanger by means of a proportionally controlled air damper. Using excess capacity in the refrigeration system, moisture is removed from the remaining air by cooling and reheating. Note: 1. Reduces growth height by 3" (75mm). 2. Amp draw increases, please consult factory. 3. Must be ordered with additive humidity control option.



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Carbon Dioxide Additive Control

CO2 Carbon Dioxide Package includes gas analyzer, control valve, and injection system. Additive Control CO2 tank not included.

CONSTRUCTION

SMC Split Machine Compartment Split machine compartment for convenience and flexibility for installation with reduced or limited access. Cabinet component dimensions become;

1) Growth Section - 73.5"W x 35"D x 78"H

2) Control Section - 21.5"W x 35"D x 78"H

RHC Right-Hand Control Panel Right-hand control compartment gives you the convenience and flexibility to arrange your chambers in a compact orderly fashion, back to back and end to end, or to facilitate its location in any appropriate space.

S Shelves Additional corrosion resistant wire shelves may be added. (One supplied with basic unit.)

CAST Casters Heavy duty swivel casters.

Man Manual Additional Operator's Manual. (One supplied with basic unit.)



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RAC	Remote Outdoor Air-Cooled Condenser	Remote outdoor air-cooled condenser complete with all weather housing, low ambient operation controls and low noise level operation. Remote location (up to 50' [15m] combined horizontal and vertical distance) of condenser only - compressor, receiver and other refrigeration components remain in cabinet machine compartment. Order "RACH" for climates with ambient temperatures from +35°C to +45°C for extended periods. Electrical: 60Hz - 208-230-1Ø-60Hz-3 wire plus ground, 50Hz - 220-1Ø-50Hz-2 wire plus ground. Consult factory for either amperages or other voltages available. Notes: 1. Inter-connecting refrigeration and electrical lines are not included and must be provided by others. 2. RAC and RACH require a separate electrical service. 3. For remote location distances over 50' (15m) please consult factory. 4. Must be ordered with an electronic 3-way proportional valve [PV].
PV	Proportional Valve	Electromagnetic 3-way proportional valve that smoothly modulates the heating and cooling functions of the chamber. The only moving part of this valve is a floating component within the pressure system, which is totally sealed.
GLY	Glycol	Glycol heating/cooling designed to work with a central chiller refrigeration system. Includes 3-way proportional valve control.
WC	Water Cooled Operation	Water-cooled hermetically sealed condensing unit with hot gas bypass system for continuous compressor operation, extended compressor life and close temperature control. Condensing unit to be located in the machine compartment, and includes a 3-way water modulating valve and hand operated shut off bypass valve. Maximum pressure drop across the condenser and water valve not to exceed 10pis (0.7 bar).
ESSENTIAL SPARE PARTS		
ESP	Essential Spare Parts	Consult factory.
SLS	Spare Lighting Set	Consult factory.



NOTES:

1. STANDARD REFRIGERATION SYSTEM IS SELF CONTAINED AIR COOLED. WATER COOLED REFRIGERATION IS OPTIONAL (1/2"Ø (13mmØ) CONNECTION)
2. REQUIRE A MINIMUM OF 2" (51mm) FROM REAR OF CHAMBER TO BACK WALL.
3. CASTER OPTION ADDS 2" (51mm) TO OVERALL HEIGHT OF CHAMBER.
4. DEPTH DIMENSION IS CHAMBER SIZE ONLY. DIMENSION DOES NOT INCLUDE DOOR LATCH OR PIPING ON BACK WALL.
5. LENGTH AND WIDTH DIMENSIONS ±1/4 (6mm). HEIGHT DIMENSION ±1" (25mm).

