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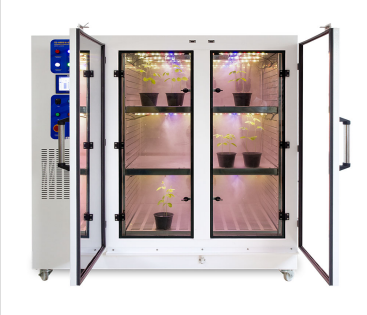

CLIMATE CHAMBER PLANT GROWTH (2 DOORS)

TE-4002/4

Used for scientific studies of plant growth, germination tests, insect incubation, seed storage, where precise control of temperature, humidity, and photoperiod are required.

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Technical Characteristics

TE-4002/4

- Inner chamber: Polished 304 stainless steel;
- Capacity: 3 trays with fixed support and distance between trays of approximately 400mm;
- Inner door: In tempered glass ;
- External port: In carbon steel with electrostatic painting 2 doors;
- Cabinet: In carbon steel with anti-corrosive treatment and electrostatic painting ;
- External dimensions: H:1925mm x W:1730mm x D:1400mm ;
- Internal dimensions: H:1500mm x W:1000mm x D:800mm;
- Casters: Swivels with locking system;
- Visit entry: Side opening in the chamber for external sensor input with Ø40mm;
- Internal vat: 304 stainless steel ;
- Observation: 130° opening with 1200m opening extension;
- Inner bowl volume: 1200 liters;
- Temperature range: 20 to 35°C with lighting system On;
- Temperature range: 15 to 35°C with lighting system Off;
- Temperature control type: Digital microprocesses via PLC;
- Temperature controller: Through 7” HMI touch screen type;
- Temperature controller reading accuracy: ±0.2°C;
- Temperature sensor: Vaisala HMP60;
- Temperature sensor reading accuracy: ±0.6°C;
- Temperature control accuracy: +/-2ºC;
- Temperature uniformity: +/- 2ºC;
- Temperature heating: Fined resistance in 304 stainless steel;
- Temperature heating power: 3KW;
- Refrigeration: 1/2HP+ cooling unit;
- Gas Type: R134A;
- Cooling power: 1650 Kcal/h at 7.2°C;
- Temperature observation: The HMI installed in the Control Panel;
- Humidity range: 50% to 80% RH;
- Humidity control type: Digital microprocesses via PLC;
- Humidity controller: Through 7” HMI touch screen type;
- Humidity display: LCD ;
- Humidity sensor: Vaisala HMP60;
- Humidity sensor reading accuracy: ±1%;
- Humidity control accuracy: ±3%;
- Humidity Uniformity: ±5%;
- Humidification type: Through TE-4002-N ultrasonic nebulizers;
- Humidity note: The HMI installed in the Control Panel. Moisture distribution duct installed with horizontal distribution. Duct Made of 304 stainless steel. Air intake system with IP 67 fan;
- Lighting range: 10 to 100% ;
- Lighting control: Through 7” HMI touch screen type;
- Lighting type: SG Delta LED lamp 3 modules;
- Number of bulbs/lighting led: 2 LED lights per floor;
- Dimensions of LED Light Bulb: 50x15x900 (mm) - W x H x L;
- Lighting Intensity: Approximately 400µmol/(m².s) at 150mm;
- Lighting control type: Digital microprocessor via PLC;
- Lighting controller: Through 7” HMI touch screen with Drive Led driver 75W Inventronics 0-10V;
- Lighting photoperiod: Yes, with ON-OFF activation via HMI programming;
- Lighting note: A single photoperiod for the 3 illuminated floors. The dimming will be done in a dependent way, that is, once adjusted the 3 floors will be modified;
- Circulation type: Forced air;
- Circulation fan: Wellington ECF2;
- Circulation quantity: 3.0;
- Circulation fan power: 20.5W;
- Circulation protection degree: IP67;
- Circulation operating temperature: -30°C to 50°C;
- Circulation flow: 500m³/h at 0Pa;

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- Circulation insulation class: A (105°C);
- Circulation observation: Ventilation System: Always activated;
- Type of supply/material: Automatic water supply from the humidification system (quoted as an option);
- Supply actuator: Solenoid valve;
- Supply sensors: Float Key Type;
- Automatic supply: Yea;
- Supply level control: Yea;
- Security of supply: Protection of the humidification system in the event of a lack of water;
- Supply notes: Preferably Use reverse osmosis water (RTE 4008);
- Installation ambient temperature: 12°C to 25°C;
- Installation humidity: 30 to 95% RH without condensation;
- Data instrument: Memory card via HMI;

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Benefits and Advantages

- Illumination by LED lamps, providing greater luminous intensity
- HMI interface with touch screen panel, bringing an innovative concept that provides simplicity of communication between users and equipment
- Access control by user level, ensuring greater security by allowing only authorized users to access specific functions
- Selection in the sampling rate, offering autonomy for the user to establish the ideal frequency for his application
- Eliminates interference caused by environmental factors and/or sources of contamination, increasing the accuracy of experiments and eliminating sources of error
- Simulates specific environmental conditions, according to the research needs
- Used in studies on the effect of climate change on plant development, mainly through the addition of CO 2
- Photoperiod Programming
- Large area for accommodating samples, optimizing the performance of tests
- Sensor adapted to extreme conditions
- Precise control of temperature and humidity provided by PID control, recommended for the control of continuous variables, allowing the system to operate stably at the desired set point, even if there are variations or disturbances that would affect its stability (door opening, for example)
- Internal construction of stainless steel, which facilitates its asepsis and guarantees a longer useful life of the equipment
- Internal glass door, allowing the visualization of the test without opening the door
- Easy installation and no assembly required
- Automatic supply using treated water (reverse osmosis)
- CFC-free cooling system (chlorofluorocarbon)
- Thermal insulation (magnet molded rubber seal) to prevent heat dissipation
- Protection system against: lack of water, freezing, internal overheating and overheating of the boiler resistance

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- Door resistance system against condensation, to facilitate the internal visualization
- Possibility of RS485 communication outputs (software)
- Easy programming of the desired variables with the ability to establish up to 48 daily and/or weekly programs
- Easy mobility, due to the wheel system
- Rigid quality control with which checks and tests guarantee the perfect functioning of the equipment, providing safety and customer satisfaction
- Customer service to clarify doubts and provide explanations about the equipment and methodology