



TECH

NOOR SANAT AZMA

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history of Gtech company

Noor Sanat Azma Ferdows Company entered the field of production with the aim of producing and exporting quality laboratory equipment with research and commercial uses, which are classified into two general and specialized categories. And received a knowledge-based certificate from the Iranian government

Our researchers have studied products with environmental conditions and supply of temperature, humidity and light, sterilizers and devices to create clean air in various fields and have succeeded in producing these devices with the required specifications in the field. Agriculture, pharmacy, telecommunications and general laboratory equipment.

We are proud to announce that with 17 years of experience in the field of design and production of laboratory equipment and we are ready to participate in new projects in the field of agriculture, pharmacy and telecommunications.

We believe that due to the increasing progress and changing needs of users, all specifications should be changed and upgraded based on user needs in order to enter the world of competition. Therefore, we were able to enter global markets in less than a year and in several Neighbor countries.

Some of the company's products in the field of agriculture:

Growth room - Greenhouse - Phytotron - Germinator - Tissue culture hood - Sterilizer - light shelves and Sterilizer

Some products in the field of telecommunications and various industries:

Temperature and humidity chambers with the ability to adjust the temperature gradient and temperature range from -70 to +180, chiller, rain chamber

Some products in the field of pharmacy:

Temperature and humidity chambers - Oven pass Box

General laboratory equipment

Types of incubators - Refrigerators - Freezers - Laminar hoods - Chemical hoods - Types of shakers and ovens

Engineer Masoud Gharaeini, born in 1977, started working as the director of laboratory equipment and thermal and refrigeration facilities at the National Research Institute of Genetic Engineering. In Noor Sanat Ferdows Company and until 1397 as a CEO and 50% shareholder, he produced laboratory equipment.

In 1398, in order to achieve the goal of export development and raising the quality level of products, and after the dissolution of Noor Sanat Ferdows Company, Noor Sanat Azma Ferdows Company was established with Gtech brand completely independently and in less than a year succeeded in exporting several types of products to neighboring countries. One of the main goals of this company is to export knowledge-based products to all over the world.

Work and study resume of Masoud Gharaini:

- 1) Has a bachelor's degree in heat and fluid mechanics
- 2) Has a master's degree in mechanics and energy conversion
- 3) Presenting a dissertation on the subject of reviewing and optimizing refrigeration systems at a temperature of -86 degrees Celsius
- 4) Obtaining a design and supervision license in mechanical installation engineering with second grade from the Ministry of Roads and Urban Development
- 5) Member of the country's engineering system organization
- 6) Obtaining the certificate of technical supervisors of medical equipment manufacturers from Iran Industrial Training and Research Center
- 7) 15 years of experience in managing Noor sanat ferdows
- 8) 10 years of experience in the management of laboratory equipment and thermal and refrigeration facilities in the National Research Institute and Genetic Engineering



The necessity of modern agriculture

The progress and development of agricultural science in recent years has clearly focused on the organic and healthy of the product along with maintaining its appearance and quality. In modern agriculture, reducing or zeroing the use of chemical pesticides is one of the main issues for Sustainable production of agricultural products must be considered.

In modern machines to produce plants, the light is turned on and off periodically to simulate day and night. But not every course has to last 24 hours!

The world's population is growing and we are using more land to produce more food. So what happens when traditional agriculture can no longer meet the needs of the hungry people? According to Phillips, the answer to this problem could be indoor and indoor farms that grow plants with LEDs. . Modern machines for agricultural production have the potential to revolutionize and transform our farming methods. And maybe they will solve the problem of world hunger.

Therefore, future farmers will be able to sow fresh and healthy seeds all year round. Without any soil or sunlight. Growth chambers are a healthy environment that does not allow any natural or aerial light. Instead, they use an adjustable LED system attached to the field that provides special lighting Which targets each plant and pays attention to the ideal growth needs of each. And produces new plants and products that are completely organic and free of toxins.

"Our goal is to develop technology that produces delicious, healthy and durable food anywhere in the world. The research we do enables local food production globally, reduces waste, Limits food distances and does not use any land.

But as we mentioned before, it's not just about healthier and tastier food. Rather, we are looking for a more possible way to grow food.

Especially when resources dwindled. The ultimate goal of the company is to develop this technology to make domestic farms more accessible Use them in crowded cities that do not have much water, energy or land.

Plant breeding application:

Plant breeding is the science of improving plant traits using genetic analysis for the production of plants with superior and desirable characteristics.

These characteristics include plant resistance to pathogens and pests, seeds and fruits of high quality in terms of nutritional values, the plant is adapted to various environmental conditions such as salinity, drought, high humidity.

Leading researchers in different countries have studied the genetic potential of plants based on their teachings in the field of genetic engineering. And they have made many efforts to produce quality plants with superior capabilities in medical and medicinal applications.

Certainly the achievements of researchers and scholars The result is access to and benefit from superior plant breeding laboratories and laboratory equipment Which has been launched today in all scientific-research centers and institutes.

Plant breeding laboratory equipment requirements:

These laboratories have equipment and devices related to genetic engineering to

meet the main goal of researchers. This equipment includes:

- Growth chamber
- Germinator
- Phytotron
- Greenhouse
- Oven
- Tissue culture hoods
- Sterilizer
- Incubator
- Shaker incubator
- Refrigerated incubator shaker
- Ben Murray

Engineering and experienced team of Noor Sanat Azma Ferdows Company with more than 15 years of experience in setting up and equipping these laboratories and is proud to provide helpful advice to collaborate with selected researchers around the world and produce up-to-date and quality equipment

In this regard, production equipment in the field of agriculture is introduced separately:

Growth chamber (walking rooms)

This type of room is produced and supplied in two models of tissue and plant culture Which in the type of plant growth due to the variability of plant size classes It has the ability to adjust the height in proportion to the growth of the plant It also has drainage to irrigate the plant. In front of the culture rooms, the floors were fixed and without drainage and has a capacity of more than 2000 glasses to cultivate plant tissue.

The growth chamber is actually a controlled room for growth and growing plants in different environmental conditions. A variety of experiments can be performed using the growth chamber or growth box Different for plant growth under different conditions. The growth chamber allows researchers to monitor environmental conditions when studying plants. Humidity, temperature, light and other factors can be controlled in these rooms. The growth chamber helps plant pathology to help researchers fight disease and geneticists to produce healthier food products.

The effect of light on the plant growth box:

- Light is an essential food for the plant.
- Everything else that is provided in growing a plant is to help absorb and use light.
- The larger the plant, the more light it needs.
- There is no substitute for light.
- If the amount of light received by the plant is insufficient, the plant dies or stops growing.

In the plant growth room, LED growth lights use very little power and are usually engineered to produce monochromatic light commensurate with the highest wavelength of photosynthesis reactions of the plant.

This scheme optimizes photosynthesis for certain amounts of input power.

In contrast to fluorescent lamps or incandescent lamps that produce only part of the desired wavelengths in addition, they have a significant waste of energy in the form of heat.

In the growth rooms of Noor Sanat Azma Ferdows Company, in order to receive light uniformly at the floor level Samples are irradiated from the top of each floor The ability to adjust the height and increase or decrease the number of lamps Ability to adjust the optical luxury required for each sample Provides for the consumer.

Ventilation in the plant growth box:

As a controlled environment, plant growth boxes have many advantages over outdoor options.

However, without proper ventilation, plants may consume resources such as oxygen and carbon dioxide faster than at the time of regeneration.

Adequate gas replacement is essential for optimal plant growth.

Ventilation is also an important way to maintain the optimum temperature for plant growth.

The production devices of this company are designed to create the same temperature conditions Samples are aerated from below each floor in this way, the explanation of temperature and humidity is done uniformly and with very high accuracy.

Advanced plant growth chambers even include air conditioning to keep temperatures down, as well as CO₂ to speed up plant growth. Advanced plant growth chambers even include air conditioning to keep temperatures down, as well as CO₂ to speed up plant growth.

The mutual features of the growth chamber for plant and tissue culture:

The outer body is made of sandwich panel with a thickness of 6 cm with polyurethane foam insulation – wide temperature-range with great curacy from +4up to +40C -net growing surface of 12m²-illumiination in top of each compartment –adjustable day and night cycles for temperature and illumination-accurate – reproducible result – CFC – free air-cooled cooling system.

Growth chamber (walking rooms)



Lighting

Each device includes 4 optical shelves, each shelf has three floors, each floor of the tissue culture room has 6 lamps and Each floor of the plant growth room has 10 lamps that can be adjusted to the height of the sample The amount of light is adjustable and morning and evening light can be simulated.





Control



The special control-unit is designed in accordance with the latest technology available. this enables the user to control all functions, which are necessary for the modern plant growth cabinets and/or in-vitro growth systems. this controller has 10 programs each programmable steps. giving a maximum of 25 program steps. one complete program can be repeated continuously for an infinitive number of times or for a set

number of days, sounding an alarm when the program has been completed. this system allows for maximum research flexibility. the control panel is password protected to avoid unauthorized entry and tampering.

Ability to connect to the network and remote control and the data logger with the possibility of loading information via USB or network is another advantage.

General specifications

MODEL	tissue culture room 30000ax	Growth Room30000ax
volume	30000	30000
External dimensions (w*d*h mm)	3120*3120*2860	3120*4120*2860
Internal dimensions (w*d*h mm)	3000*3000*2200	3000*4000*2200
Growth area	Min 12m2	Min 12m2
Growth height (per shelf)	40 cm	50cm
Airflow vertical	(0.5m/s)	(0.5m/s)
specifications		
Temp range (lights off)	4 c to +40 °C	4 c to +40 °C
Temp range (lights on)	7 c to +40 °C	7 c to +40 °C
Temp fluctuation	±0.2 °C	±0.2 °C
Variation)1shelf,lights on)	±1 °C	±1 °C
Humidity range mapper	40-95%	40-95%
Light level	3000-10000lux	3000-20000lux
Facilities		
Temperature controller electronica PID		
Temperature sensor PT100		
illumination	Each floor 6*36 watt Total 72*36 watt	Each floor 10*36 watt Total 120*36 watt
Requirements		
Power supply	380 v Max 20A	380 v Max 25 A

Phytotrons



- They are the same tissue culture rooms, the only difference of this product is its portability and is used on a laboratory scale before mass production.
- The mutual features of the plant growth chamber Phytotron 600ax &

Phytotron1300ax:

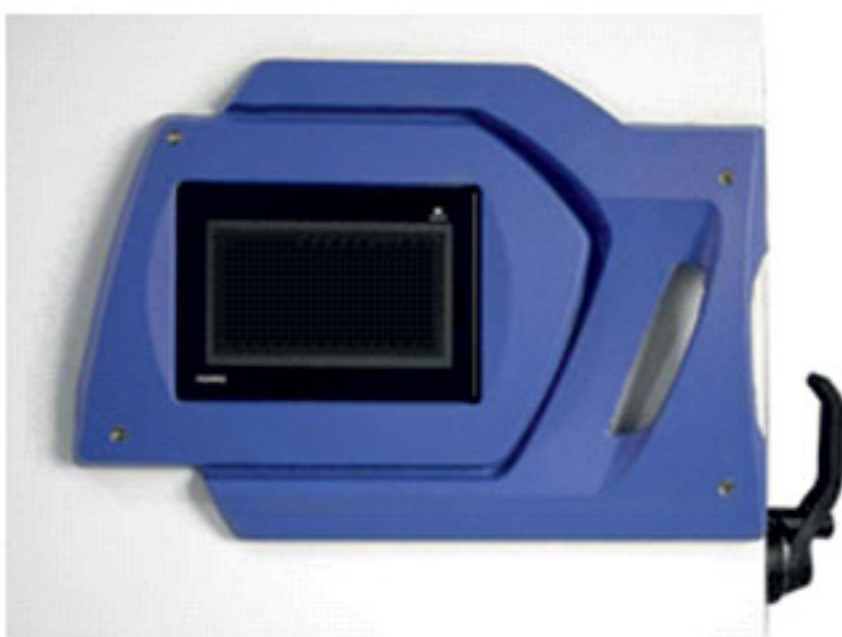
- Wide temperature-range with great accuracy from +4 up to +40 c
- Three identical compartments
- Net growing surface of 3 * 0.5 m² Phytotron 600ax or 6 * 0.5 m² Phytotron1300ax
- Illumination in top of each compartment.
- Adjustable day-and night cycles for temperature and illumination
- CFC-free air-cooled cooling-system.

Lighting

- The illumination is provided in top of each compartment model Phytotron 600ax
- With six fluorescent lamps located in a closed lighting fixture, conforms to safety IP65
- The cold / white type is standard but different types are available on request as well(LED)
- In both models the lamps can be switched and adjusted in two levels while the timer can be set for a day / night cycle



Control



The special control-unit is designed in accordance with the latest technology available. This enables the user to control all functions which are necessary for the modern plant growth cabinets and/or in-vitro growth systems. This is the modern plant growth cabinets and/or in-vitro growth systems. This controller has 99 programs each programmable steps, giving a maximum of 4000 program steps. One complete program can be repeated continuously for an infinite number of times or for a set number of days. Sounding an alarm when the program has been completed. This system allows for maximum research flexibility. The control panel is password protected to avoid unauthorized entry and tampering.

General specifications

MODEL	Phytotron 600ax	Phytotron 1300ax
volume	600litres	1300 litres
External dimensions (w*d*h mm)	1400*850*1950	2250*850*1950
Internal dimensions (w*d*h mm)	650*700*1200	2*(650*700*1200)
Growth area	3*0.5m ²	6*0.5m ²
Growth height (per shelf)	Appr 25 cm	Appr 25 cm
Airflow vertical	(0.5m/s)	(0.5m/s)
specifications		
Temp range (lights off)	4 c to +40 °C	4 c to +40 °C
Temp range (lights on)	7 c to +40 °C	7 c to +40 °C
Temp fluctuation	±0.2 °C	±0.2 °C
Variation (1shelf,lights on)	±0.5 °C	±0.5 °C
Humidity range mapper	40-95%	40-95%
Light level	3000-10000lux	3000-20000lux
Facilities		
Temperature controller electronica PID		
Temperature sensor PT100		
illumination	3/6*18 W TL	6/6*18W TL
Requirements		
Power supply	220-240V Min3A-max 8A, 2kw 50/60 Hz	220-240 V Min 6A-max16, 4kw.50/60Hz
weight	450kg	700kg

Airflow

Airflow is distributed horizontally via a perforated side wall plenum. This helps to establish uniform air distribution through at 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 system is provided by a self-contained. Air-cooled condensing unit with a hot-gas bypass system for continuous operation. Pressure transducers are included for monitoring the status of the refrigeration system.

Germinators



A seed germinator is a device for germinating seeds. Typically, these create an environment in which light, humidity and temperature are controlled to provide optimum conditions for the germination of seeds.

Application: seed germinator is related to the laboratories of agricultural and research centers for seed and growth and measurement of Germinating Power and entomology.

- It has lamps for plant growth with suitable plant wavelength from both sides of the device

Only the two sides of the device are made of double-glazed glass to shine the necessary light from the sides of the germinator into the device. Double glazing prevents heat from penetrating into the device. The way light is irradiated from both sides reduces the uniformity of light in the culture trays and Light intensity varies slightly at different points.

But according to the use of the device, there is no particular problem. In fact, it can be said that the way the light radiates in the germinator makes this device not very suitable for the post-germination stages. It is better to use a phytotron device for the next stages or plant growth.

This device has also been widely used in entomological laboratories. Due to the fact that in any case, living organisms are bred in the germinator, the accuracy of temperature and humidity control is very important. Plant growth light can be used in it. There is special light for growth in the form of fluorescent or LED. It is possible to design light vegetatively or reproductively.

The mutual features of the seed germinator or germinate-300ax & germinat-600ax

A solid cabinet: executed in coated enameled steel and stainless steel for use of years-wide temperature-range with great accuracy from +4 up to +4 c –three identical compartments-net growing surface of 2*0.5m² germinate-300ax or 4*0.50m² germinat-600ax illumination in two side of each compartment-solid executed with double walls-adjustable day and night cycles for temperature and illumination-accurate-reproducible result-CFC-free air cooled cooling system.

Lighting

The illumination is provided in two side of each compartment. Model germinate-600ax with 14 fluorescent lamps located in a closed lighting fixture, conforms to safety, ip5.the cold/white type is standard. But different types are available on request as well (LED)in both models the lamps can be switched and adjusted in two levels, while the timer can be set for a day / night cycle.



Control



The special control-unit is designed in accordance with the latest technology available. This enables the user to control all functions which are necessary for the modern plant growth cabinets and/or in-vitro growth systems. This is the modern plant growth cabinets and/or in-vitro growth systems. This controller has 99 programs each programmable steps, giving a maximum of 4000 program steps. One complete program can be repeated continuously for an infinite number of times or for a set number of days. Sounding an alarm when the program has been completed. This system allows for maximum research flexibility. The control panel is password protected to avoid unauthorized entry and tampering.

General specifications

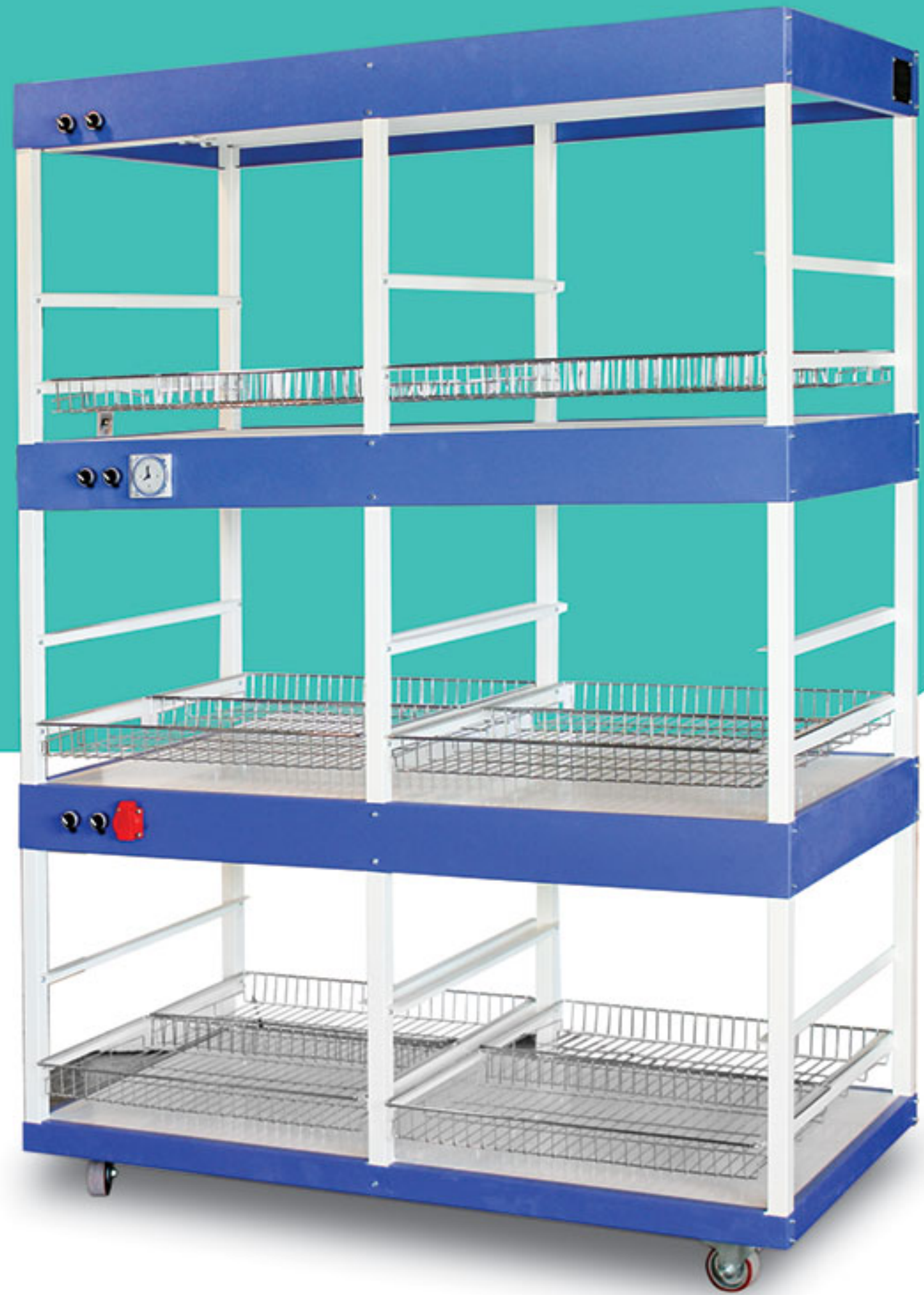
MODEL	germinate-300ax	germinate-600ax
volume	300 litres	600 liters
External dimensions (w*d*h mm)	900*850*1420	900*850*2020
Internal dimensions (w*d*h mm)	500*400*700	650*700*1200
Growth area	2*0.5m ²	4*0.5m ²
Growth height (per shelf)	Appr 25 cm	Appr 25 cm
Airflow vertical	(0.5m/s)	(0.5m/s)
specifications		
Temp range (lights off)	4 c to +40 °C	4 c to +40 °C
Temp range (lights on)	7 c to +40 °C	7 c to +40 °C
Temp fluctuation	±0.2 °C	±0.2 c
Variation (1shelf,lights on)	±0.5°C	±0.5c
Humidity range mapper	40-95%	40-95%
Light level	3000-10000lux	3000-20000lux
Facilities		
Temperature controller electronica PID		
Temperature sensor PT100		
illumination	14*18 W TL	14*36W TL
Requirements		
Power supply	220-V240 Min3A-max 8A, 2kw 50/60 Hz	220-240 V Min 6A-max16, 4kw.50/60Hz
weight	450kg	700kg

Light shelf

By using the light shelf, the light needed for plant growth or tissue culture can be provided. With the help of this device, height can be used and more cultivation area can be provided. The user can place these shelves in spaces where the temperature and humidity are controlled.

They have moving floors and the distance from the sample to the light is adjustable.

Day and night time can be adjusted by using the timer and the light intensity can be adjusted.



Application

It can be used in agricultural research centers and laboratories and tissue culture production companies. Also, its home model can be used at home to produce houseplants and vegetables.

General specifications

volume	3 floors	4 floors	3 floors
External dimensions (w*d*h mm)	700*600*1200	900*850*2200	800*800*2200
Growth area	3*0.8 m ²	4*0.8 m ²	3*0.8 m ²
specifications			
Light level			
Facilities			
illumination	8*18 W TL	6*18 W TL	10*18 W TL
Requirements			
Power supply	220-240 V 360 W 50/60 Hz	220-240 V 430 W 50/60 Hz	220-240 V 540 W 50/60 Hz

Research greenhouse



Research greenhouses are like walking growth chambers and have the ability to control temperature and humidity. This device has a metal frame with hot galvanized coating which is connected in the form of bolts and nuts. The outer cover is applicable polycarbonate sheet or glass. Double glazing can also be used in small projects. The glass used in the roof of the greenhouse is better to be secured to break into small pieces if broken.

The light transmittance through polycarbonate sheet is 87% and in plain glass it is 95%. The thermal conductivity of 6 mil polycarbonate sheet is equal to 3.5 watts per square meter and in 6 mils thick glass is equal to 8.5 watts per square meter.

Glass has a longer life than polycarbonate sheet, Polycarbonate sheets will usually need to be replaced every 10 years.

In terms of temperature and humidity distribution, it is like an outdoor growth chamber or phytotron in summer, it must be shaded to reduce the heat load caused by sunlight. Air circulation is created by evaporator fans installed on both sides of the greenhouse and causes proper distribution of temperature and humidity in the greenhouse.

Auxiliary light should be used to provide light and adjust the length of day and night. Plant growth bulbs can be used.

Lighting

The illumination is provided in top of each compartment.

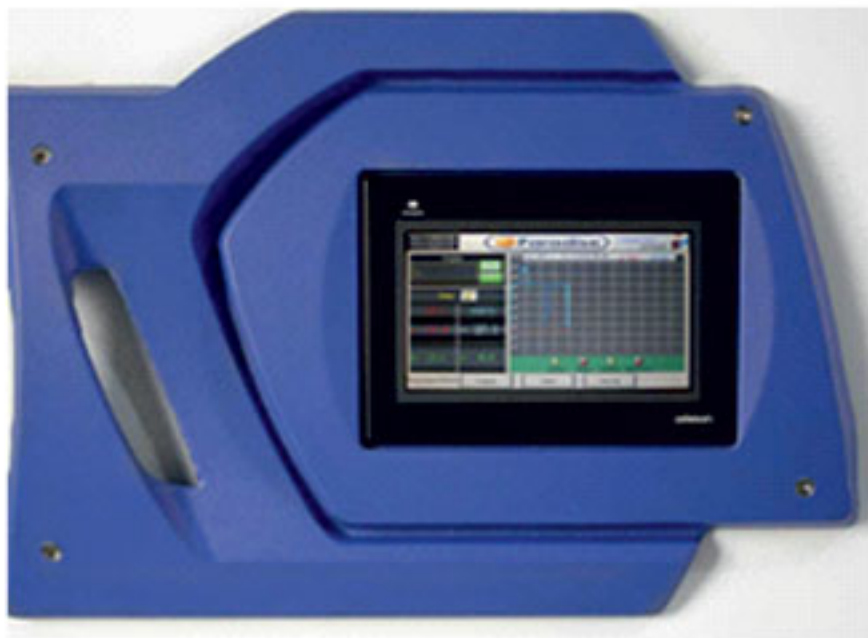
The cold / white type is standard but different types are available on request as well (LED) or HID lamps.

In both models the lamps can be switched and adjusted in two levels while the timer can be set for a day / night cycle.

The mutual features of the research green house:

- Wide temperature-range with great accuracy from +20 up to +30 c
- Net growing surface of 16 m²
- Accurate-reproducible-results.
- CFC-free air-cooled cooling-system.

Control



The special control-unit is designed in accordance with the latest technology available. this enables the user to control all functions which are necessary for the modern plant growth cabinets and/or in-vitro growth systems. This the modern plant growth cabinets and/or in-vitro growth systems. This controller has 99 programs each programmable steps, giving a maximum of 4000 program steps. One complete program can be

repeated continuously for an infinitive number of times or for a set number of days. Sounding an alarm when the program has been completed. This system allows for maximum research flexibility. The control panel is password protected to avoid unauthorized entry and tampering.

General specifications

MODEL	GREEN-HOUSE
volume	Customizable on request
Minimum External dimensions (w*d*h mm)	4000*4000*4000 m ²
Internal dimensions (w*d*h mm)	4000*4000*4000 m ²
Growth area	12 m ²
Airflow vertical	3 m
Specifications	
Temp range	20 c to +30 °C
Temp fluctuation	±2 °C
Humidity range mapper	40-95%
Light level	20000lux
Facilities	
Temperature controller electronica PID	
Temperature sensor PT100	
illumination	On the request
Requirements	
Power supply	380V-3N 10A 50/60 Hz

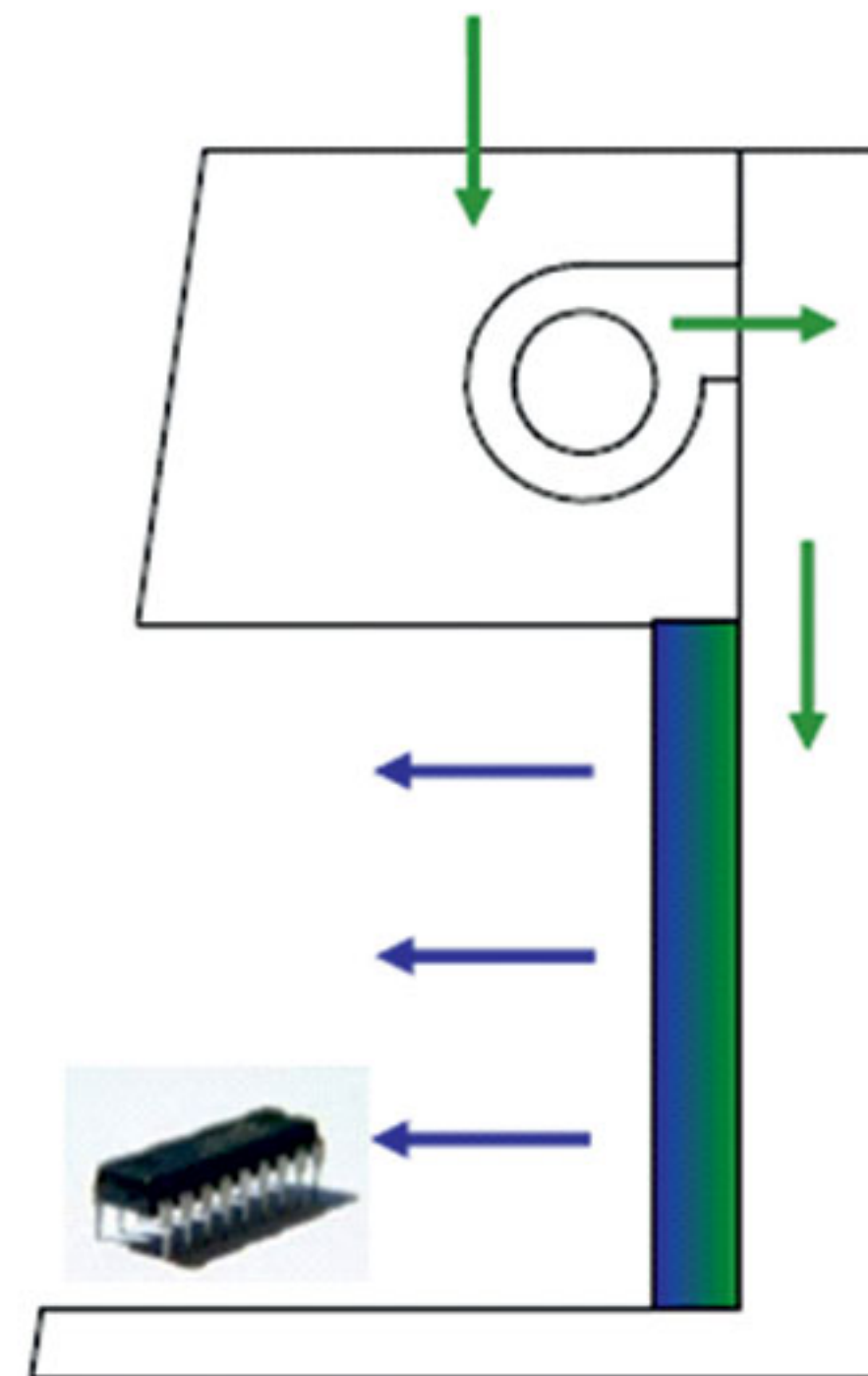
Bio safety cabinet for Plant tissue culture



- Tissue culture hoods provide a reduced particulate environment for the study and growth of tissue cultures for many different medical, scientific, and botany applications. These ISO Class 5 clean rooms utilize positive pressure, and a laminar airflow pattern that creates a clean and controlled environment and prevents outside contamination. In addition, tissue culture hoods host a powerful filtration system equipped with the HEPA or ULPA filters brings in outside ambient air removing up to 99.95% of particles 0.3 microns and smaller for HEPA filters or 99.99997% of particles 0.12 microns or smaller for ULPA filters
- Laminar-flow cabinets (hoods) are physical containment devices that act as primary barriers either to protect the material being manipulated within the hood from worker generated or environmental sources of contamination, or to protect the laboratory

worker and laboratory environment from exposure to infectious or other hazardous materials that are present within the hood. Cell culture applications utilize two types of laminar flow hoods: (a) the horizontal-flow clean bench and (b) the biological safety cabinet. Both types of hoods use a high-efficiency particulate air (HEPA) filter and blowers that generate a no mixing stream of air.

The horizontal laminar-flow clean bench is used to provide a near-sterile environment for the clean (i.e., no contaminating) handling of nonhazardous material such as sterile media or equipment. Because the air stream pattern directs the flow of air within the hood directly back to the hood operator and the room. horizontal flow hoods are never to be used with infectious agents or toxic chemicals.



Application

- Suitable for agricultural and tissue culture research centers for plant growth and plant tissue culture
- Exterior body of galvanized iron sheet with electrostatic coating
- Internal body made of 304 steel with one-piece floor
- Has a centrifugal fan with 1400 rpm
- It has a UV lamp and a LED light bulb
- Air flow horizontally and laminar at a speed of 0.45 meters per second

General specifications

MODEL	Hood-c1-120ax	Hood-c1-120ex	Hood-c1-180ax	Hood-c1-180ex
External dimensions (w*d*h mm)	132*89*195	135*99*195	192*89*195	195*99*195
Internal work area Dimensions (w*d*h mm)	116*56*65	132*79*86	176*69*56	192*79*176
Average inflow	0.46 m/s			
Air flow velocity down flow	0.34 m/s			
Filter	120*60	2(60*90)	60*180	3(60*90)
sound	>62 DBA			
Light intensity	<1000 Lux	<1000 Lux	<1200 Lux	<1200 Lux
Cabinet Construction(main body)	Coated enameled steel			
Cabinet construction Work zoon, side walls)	Stainless steel type 304			

Sterilizer



It is a device used to sterilize equipment in tissue culture. The inner tank of the sterilizer is filled with glass beads and heated to a temperature of 250 °C. The time required to reach the temperature is about 20 minutes. In tissue culture hoods, this device is installed under the hood table so that it does not occupy extra space inside the hood.

General specifications

Temperature	Max 250 °C
External dimensions	
Internal dimensions(Diameter *height)	145*55 mm
Type of controller	Digital PID controller
Materials inside the tank	Glass bead
Electricity required	220V 2A
Time required to reach temperature	20 min



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