MICRO CLIMA-SERIES™

HIGH SPECIFICATION PLANT GROWTH CHAMBERS

SNIJDERS LABS

HIGH SPECIFICATION PLANT GROWTH CHAMBERS

The Plant Growth Chambers deliver reproducible plant growth patterns throughout the entire growth cycle through the lifetime of the chambers.

Snijders Labs has manufactured and developed climate chambers in The Netherlands since 1988. Our extensive experience is gained from working directly with scientists to help create design solutions for their needs. This program has helped evolve the High Specification Plant Growth Chambers. Since we control all aspects of manufacture, this allows us to react flexibly and quickly to new developments in scientific research. This evolution of design allows for a high degree of uniformity of light, temperature and humidity across the entire chamber. It has also a large temperature and humidity range to allow mimicking of climatic conditions, anywhere in the world, accurately. Diurnal cycles incorporating a dawn/dusk cycle can be programmed in real time. The resultant design has a high degree of built in flexibility and future proofing as standard, enhanced by the available options.

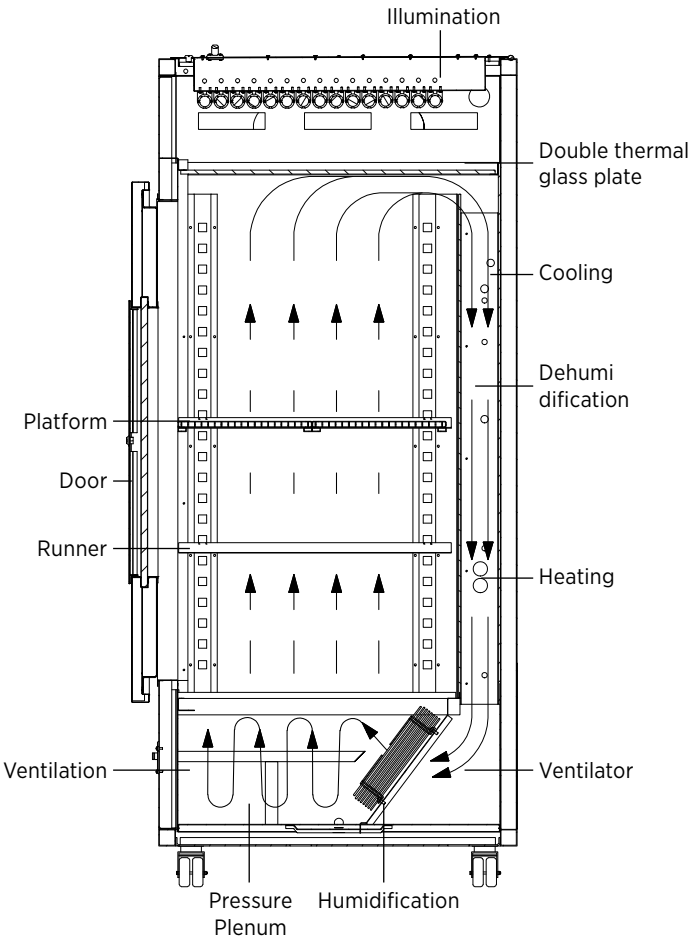
The Plant Growth Chambers achieve the optimal climatic conditions by accurately controlling all parameters through the powerful mTRON T controller with touch screen.

Arabidopsis Thaliana is grown in the MICRO CLIMA High Specification Plant Growth Chambers or in the Micro Clima Modular bulk growth (3.3 m^2 capacity) MD1400 chamber. The MD1400 has 1 up to 5 tiered lighting system.

FEATURES HIGH SPECIFICATION PLANT GROWTH CHAMBERS

- Very accurate, reproducible results.
- Fully programmable, with up to 100 programs and all the features required for today's plant growth research running in real time.
- Temperature, moisture and illumination adjustable for day and night cycles.
- The illumination options range from 0 to 2.000 and more µmol m^{-2} s^{-1} max inclusive of dimming and dawn/dusk cycles.
- The lamps are housed behind the thermal glass in a lamp loft and all the heat is removed by fans to atmosphere.
- Wide temperature range, from +4 up to +50°C (optional: -15°C to +50°C).
- Net growth surface area MC1000 0.9 m^2 (MC1750 1,4 m^2), which can be doubled to 1.8 m^2 (MC1750 2,8 m^2) with the secondary Arabidopsis light rack option.
- Growth height: 1.2 m standard (1.4m optional).
- Universal design to cover all user requirements for in-vivo tests.
- Potential free contact for remote alarm.
- Temperature, humidity and lighting adjustable for day and night cycles.
- Environment and energy friendly (CFC-free) cooling system.
- Ethernet connection for online visualization display on PC and/or Android mobile phone
- Ethernet connection for receiving an alarm on e-mail.

Fig. 1 Air circulation



CONSTRUCTION

The exterior of the cabinets is galvanized plate electrolytically coated with epoxy powder in off-white (RAL9002). The interior is finished in white 'Trespa' (HPL) with stainless steel around. The outer door has a key lock and a viewing window with a lockable door, 450 x 650 mm. The mixing fans are in the base of the cabinet, within the pressure plenum (fig.1). These fans return the conditioned air back into the chamber with an adjustable air circulation of 0.1 m/s to 0.5 m/s controllable via the variable speed fans. The chamber is fitted with 2 half width adjustable platforms, made of white polystyrene in a stainless steel frame. Low profile heavy duty casters provide 360° mobility.

CONTROL SYSTEM

The web-based controller, model mTRON T, is a micro-processor controller with touch screen designed according to the latest technology. It enables the user to control all the functions, required for the modern plant growth cabinets and/or in-vitro growth systems. This mTRON T allows for accurate control of a wide range of parameters for example humidity, temperature, illumination and CO_2.

By connecting the climate chamber to intranet/internet the display can be visualized on the PC and/or display of an Android mobile phone.

Fig. 2 mTRON T

TEMPERATURE CONTROL

The mTRON T controller checks and regulates the set temperature by PID control of the cooling and heating systems. The controller shows both the set and actual values in °C, recorded by means of a capacitive temperature sensor.

HUMIDITY

- The Plant Growth Chamber controller checks and controls the set moisture content (RH) by a humidification and dehumidification system. An ultrasonic humidifier controls humidification. Dehumidification is controlled by the evaporators.
- The display shows both the set and actual values in percentages via measurements taken with a capacitive humidity sensor.
- A direct connection to the demineralized water supply.
- De-ionized water can also be supplied from a tank.

Fig. 3.1 Example of program editor

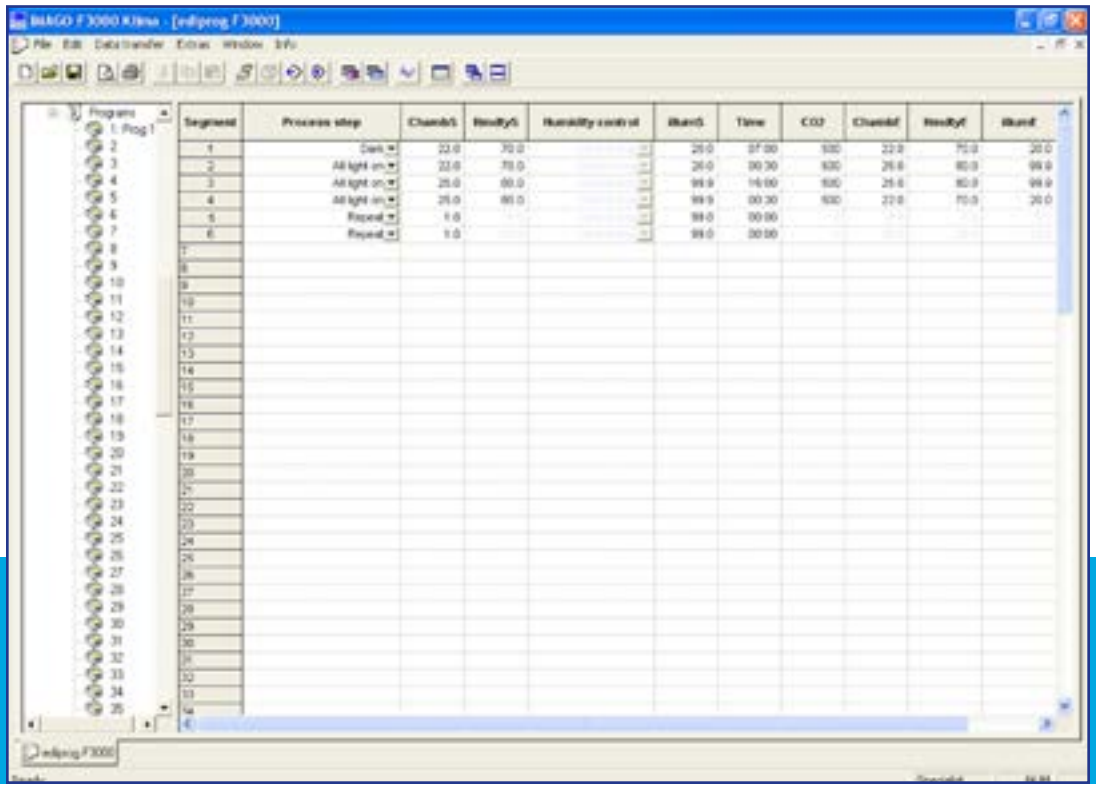
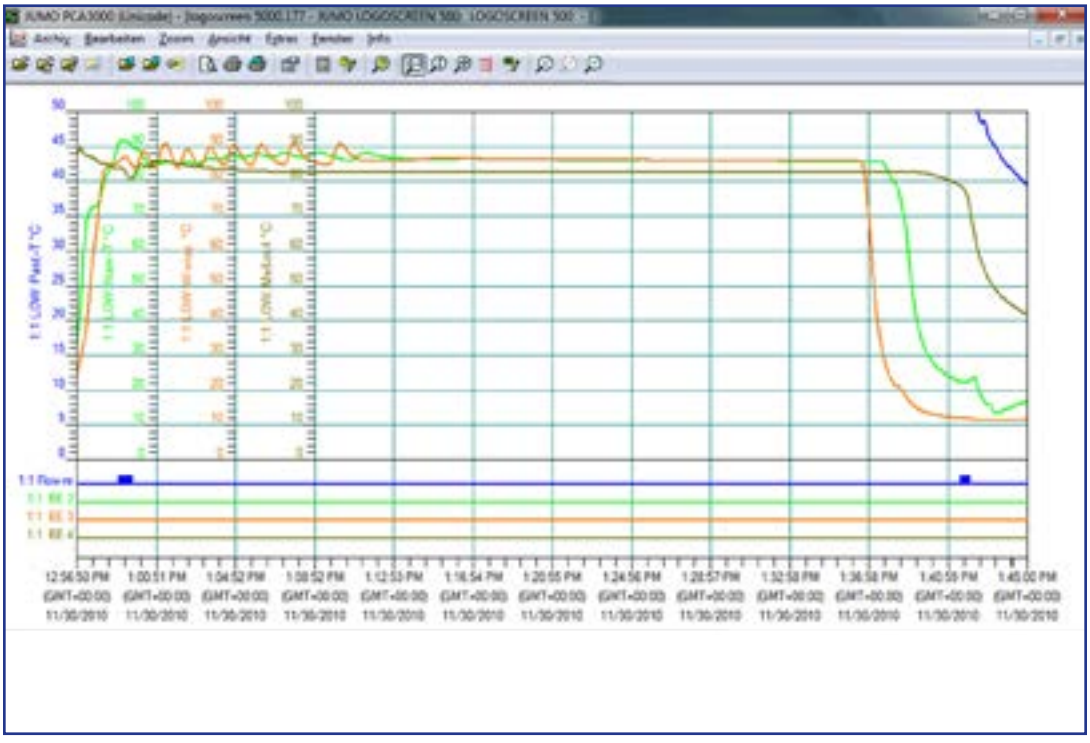
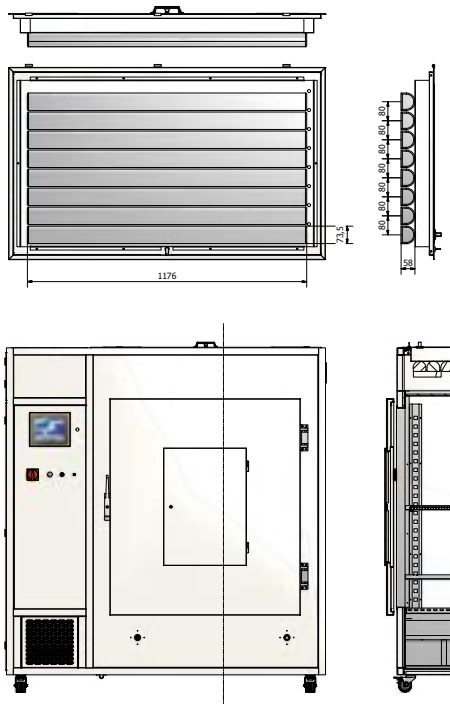
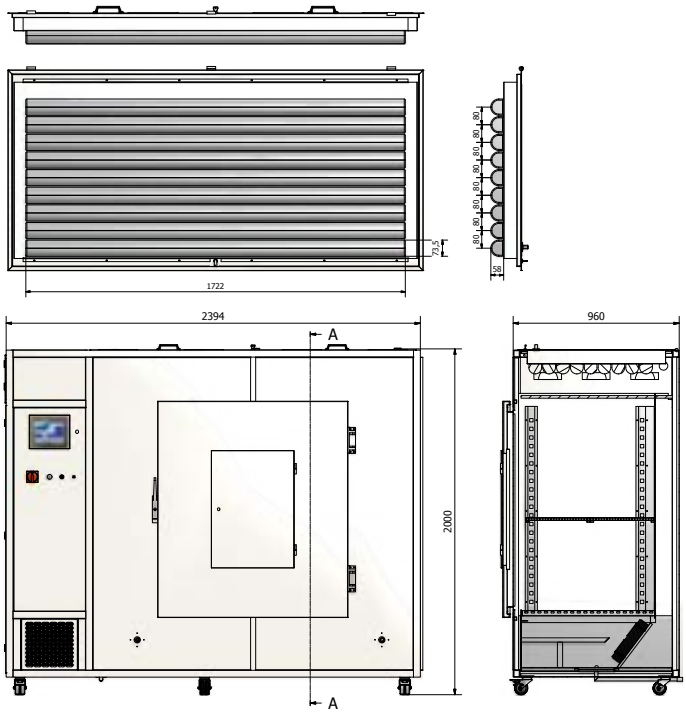


Fig. 3.2. Example of report for temperature and humidity





MC1000



MC1750

FEATURES

- Ease of programming in a spreadsheet format.
- Digital display of the measured temperature and humidity value.
- CO_2 and dimming displayed if options purchased.
- Max. 100 programs, each with a max. 100 steps running in ramp or step mode in real time.
- By means of the simple to program by a PC.
- 8,4 inch multicolor touch screen display.
- Ethernet connections (2 pieces)
- Key lock as standard.
- Configuration and recording in English.
- The main screen shows real time, program number, segment, number, the time until the next segment starts, temperature, humidity (actual and set), lights on/off, alarms, heating & cooling, humidification and dehumidification actions.

OPTIONAL

- Automatic log function in combination with a registration function.
- Software to allow the download and recording of temperature and humidity in a graphical or numerical format.
- Multiple chambers can be linked together and controlled by the PC based SVS 3000 software for networking.
- Autodialing via the Ethernet (SVS alarm system).
- Program editor.
- Communication interface for MODbus or Profibus-DP.

ALARM SYSTEM AND SAFETY

- The alarm will sound when the measured temperature or moisture content by the mTRON T controller deviates +/-5% RH of the temperature set point and/or +/-5% of the moisture setpoint. This range is adjustable.
- Ethernet connection: possibility alarming via e-mail.
- Potential free contact.
- Minimum safety thermostat → switches when cooling and dehumidification switches off.
- Maximum safety thermostat → switches when heating and lighting switches off.
- Optical alarm led and acoustic alarm buzzer.

Fig. 4 Top view MC1000 (MC1750)

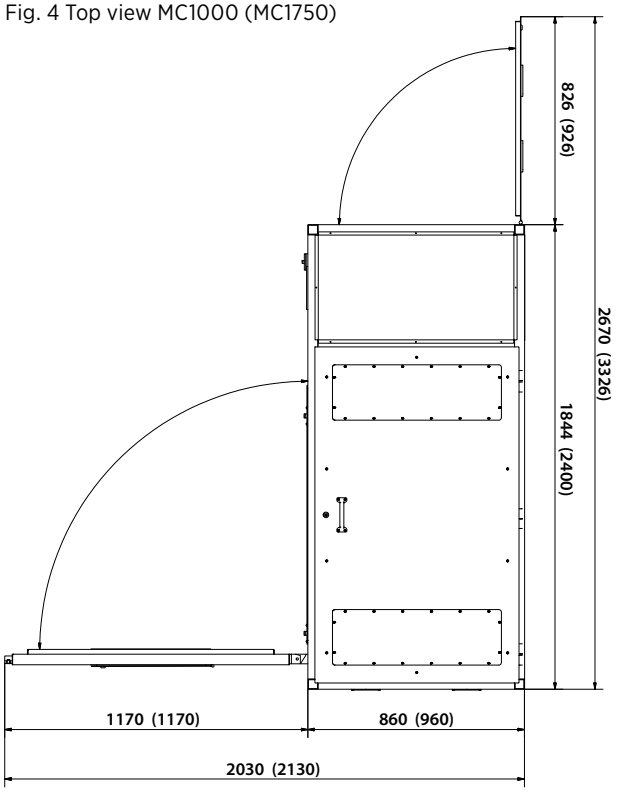


Fig. 5 Front view MC1000 (MC1750)

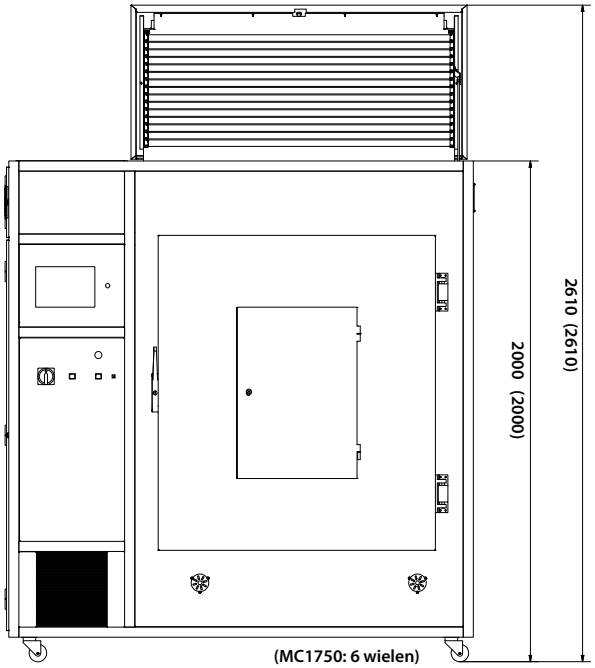
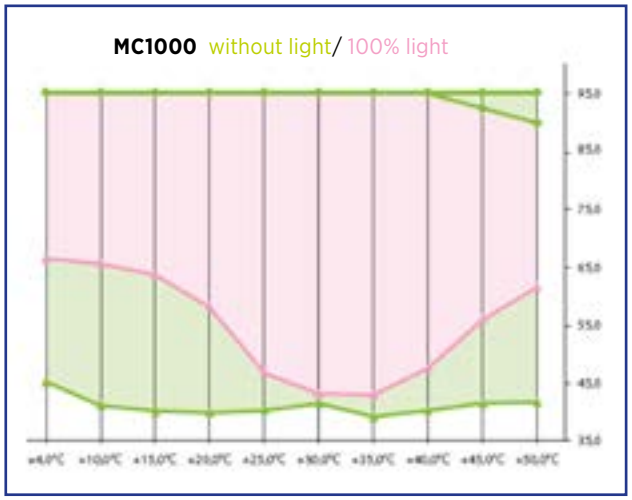


Fig. 6 Performance envelope



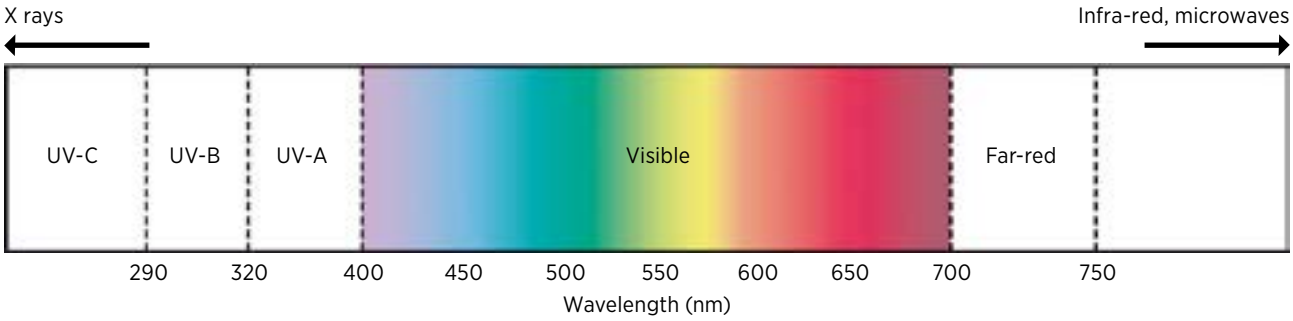
ILLUMINATION

- High Specification Plant Growth Chamber (model MC1000 and MC1750) is fitted with LED modules with daylight spectrum.
- LED modules for different growth applications are available on request.
- All extraneous heat sources are excluded from the working area to help optimize optimum climate conditions. That is why the LED modules and drivers are situated in the upper compartment and separated by glass from the working area.
- Excess heat from the lamp loft is removed directly to the external environment by separate fans.
- The lamps arrangement and chamber design creates maximum homogeneity.
- The program can be programmed in ‘ramping’ which makes it possible to simulate sunrise and sunset.

WORKING AREA

The working area includes a platform and a lockable door. There are 2 capacity options: the 1000 ltr. (MC1000) and the 1750 ltr. (MC1750). The platform is constructed in two sections which can be split allowing plant growth at two different heights with

Fig. 7 Color spectrum



uninterrupted light within the same chamber. The influence of the light intensity on the plant growth and flowering can be tested by experimenting with the placement of the split platform heights.

OPTIONAL

- Plastic water tank (10 ltr.)
- Stainless Steel water tank (20 ltr.) for the Ultrasonic humidity system.
- Ion selective reverse osmose filter (to soften the tap water).
- CO_2-injection and measurement.
- CO_2-reduction system.
- Temperature range: -15°C up to +50°C.
- Dim function controller.
- LED lighting, multi spectral and more options.
- Stainless Steel platforms or extra polystyrene platforms.
- A second lighting platform for extra growth capacity (m^2) for Arabidopsis.
- Ozone or nitro's oxide stainless steel pipe work for gas injection.

HIGH SPECIFICATION PLANT GROWTH CHAMBERS
TECHNICAL INFORMATION

PHYSICAL	MC1000	MC1750
Volume	1000 liters	1750 litres
External dimensions (w x d x h)	1860 x 950 x 2045 mm	2415 x 1050 x 2045 mm
Internal dimensions (w x d x h)	1300 x 700 x 1150 mm	1850 x 800 x 1150 mm
Growth area	0.9 m^2 (1.8 m^2 option)	1.4 m^2 (2.8 m^2 option)
Maximum growing height	1.2 m	1.2 m
Laminar airflow (adjustable)	vertical	vertical
Variable Speed Control	0.1 to 0.5 m/s max	0.1 to 0.5 m/s max

SPECIFICATIONS		
Temperature range (lights off)	+4°C till +50°C	+4°C till +50°C
Temperature range (lights on)	+10°C till +50°C	+10°C till +50°C
Temperature fluctuation	0.3°C	0.3°C
Variation (total chamber)	1.0°C	1.0°C
Variation (1 shelf)	0.3°C	0.3°C
Humidity range (depending on temperature and light)		
40°C	40 – 95%	40 – 95%
30°C	45 – 95%	45 – 95%
20°C	55 – 95%	55 – 95%
Max. humidity (lamps on / off)	90% / 95%	90% / 95%
Light intensity	in mutual consultation	in mutual consultation

FACILITIES		
Temperature & humidity controller	Microprocessor PID	Microprocessor PID
Temperature sensor	Capacitive sensor	Capacitive sensor
Illumination	LED modules	LED modules
Humidifier	Ultrasonic	Ultrasonic
Humidity sensor	Capacitive sensor	Capacitive sensor

REQUIREMENTS		
Power supply	220/240V, 16A, 50 Hz	380V, 3 phase, 16A/fuse, 50 Hz
Water connection	Advisable: demineralized water (pH value up to appr.5 micro Siemens). ½" connection with possibility to ¾" by means of an adapter ring and a gradient to the hose pilaster.	
Water drain	For condensation water and evt. dripping water.	

*Specifications subject to change

SNIJDERS LABS: EXPERIENCED INNOVATORS

SNIJDERS LABS forms part of the Snijders Group, which actively delivers equipment and products for scientific research & development as well as internal transport systems and examination couches for the health care sector under SNIJDERS CARE. All design, manufacture and testing is held in house to assure high quality production and investment in new technologies for the production of all Snijders products. The total control of the manufacturing line means that Snijders can offer total quality, in-depth knowledge and detailed assistance to all of their clients.

03-2025

SERVICE AND WARRANTY

Contact your local distributor who will guarantee quality and service (if necessary check our website for distributor details).

VISIT OUR WEBSITE WWW.SNIJDERSLABS.COM

There you'll find all the latest information about:

- ULT freezers (-86°C) with data sheets of any type, racking systems, boxes and other accessories
- a variety of climate cabinets for plants, seed germination, fungi, snails and insects research with temperature-, light- and humidity control
- (cooled) incubators and incubator walls, designed for general microbiological research of among others food, water and medical laboratories.

SNIJDERS LABS

Office and Production
Laurent Janssensstraat 105
5048 AR Tilburg
The Netherlands

T +31 13 750 15 55
F +31 13 463 86 35
info@snijderslabs.com
www.snijderslabs.com