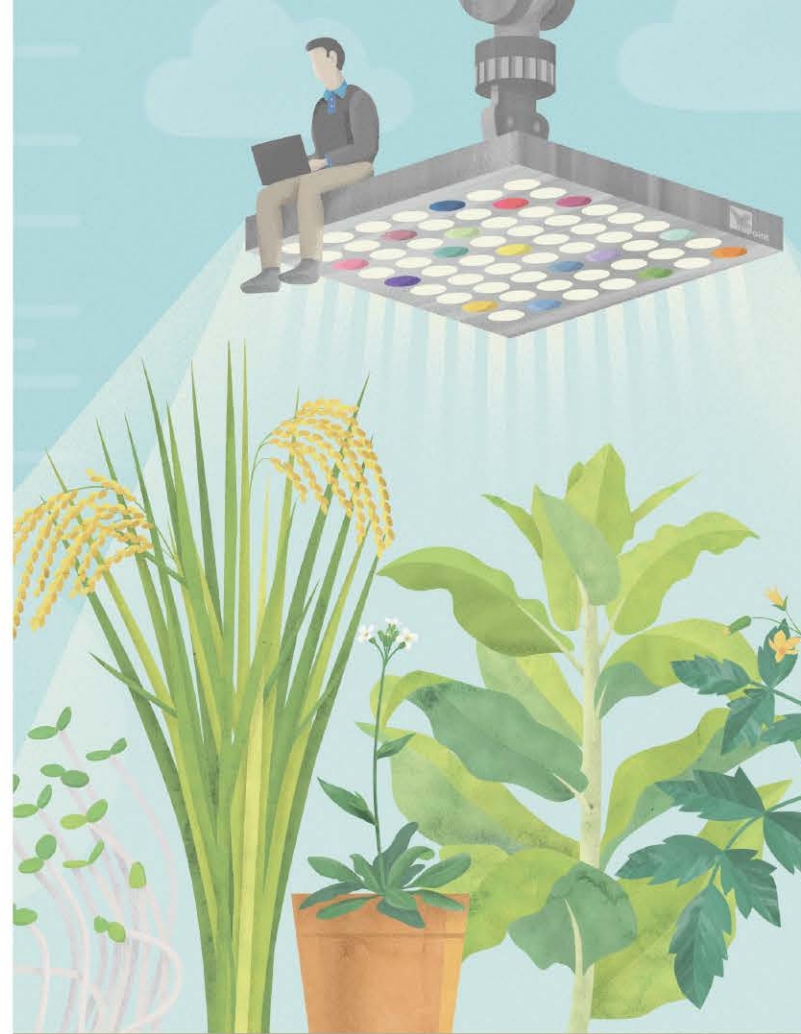
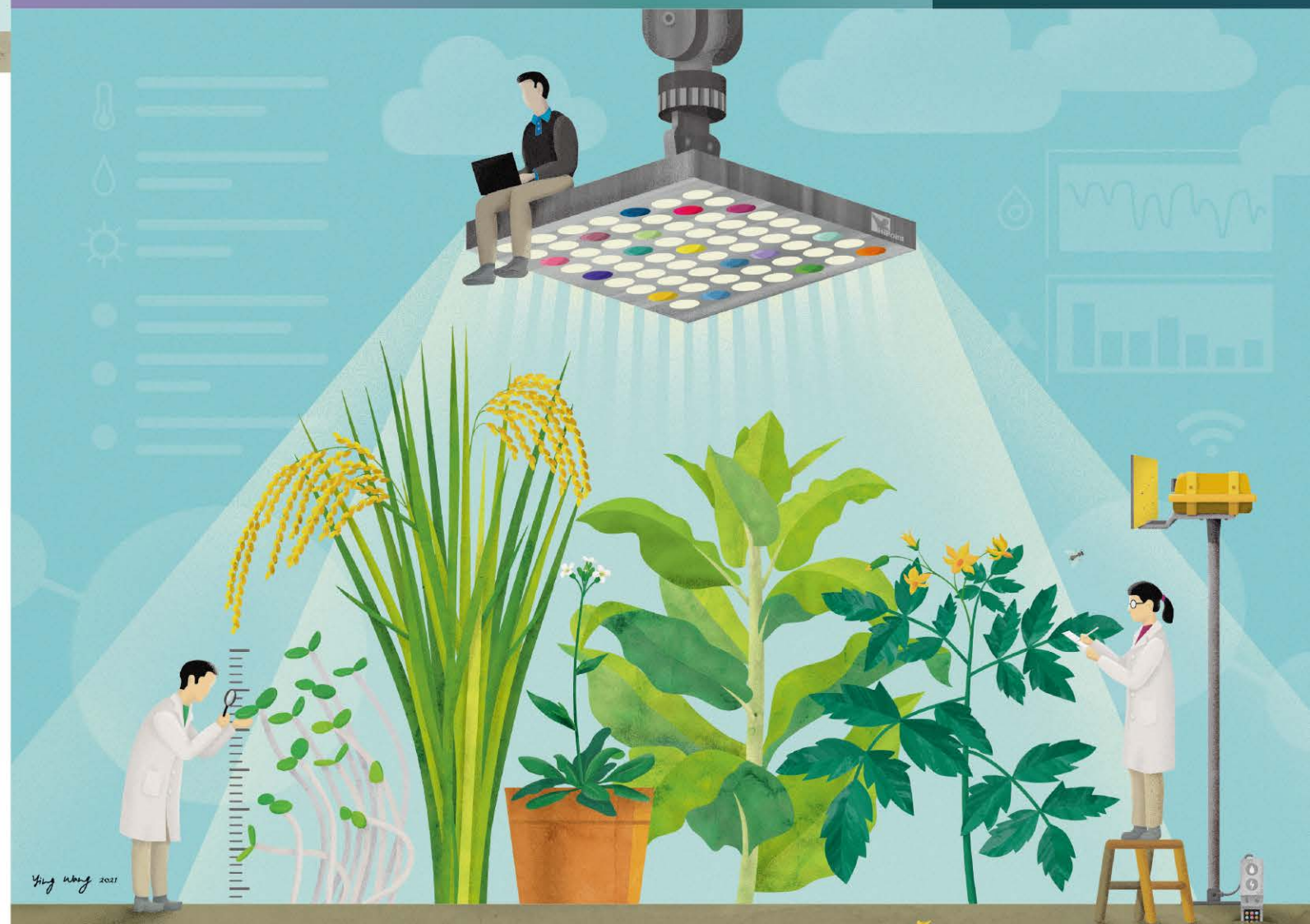




CE IEC-61010  
EN 61326-1:2021  
EN 61010-1:2010+A1:2019



PLANT GROWTH CHAMBER  
REACH IN GROWTH CHAMBER  
MULTI-COMPARTMENT CHAMBER  
HIGH LIGHT INTENSITY CHAMBER  
VERSATILE CHAMBER



No.3, South 7th Rd., C.T.I.P.  
Kaohsiung City, Taiwan  
Tel: 886-7-8128885  
Fax: 886-7-8128336  
Web: [www.twhipoint.com](http://www.twhipoint.com)  
E-mail: [sales05@twhipoint.com](mailto:sales05@twhipoint.com)

Printed in Taiwan (R.O.C.) • Growth Chamber 2022 © by TAIWAN HIPOINT CORPORATION.  
Some of the illustrations in this publication include special accessories.  
We reserve the right of technical modifications. Dimensions are subject to confirmation.

YOUR HIPOINT PARTNER

# Taiwan HiPoint Corporation

## | *More Effort, Better Solution!*

Taiwan **HiPoint**'s core purpose is to make a significant technical contribution to improving the health and safety of mankind. Our aim is to allow our customers to continuously improve their research with astonishing products that best support their daily life.

Our motto "More Effort, Better Solution" inspires us to unremittingly tend to perfection and to differentiate ourselves from others through continuous innovation. To this end, we continuously work in collaboration with the most prestigious institutes of the country.

The future is at the center of all our reflections and activities. We work in a sustainable world with our partners that inspires and drives us to improve every day. Everyone at Taiwan **HiPoint** is dedicated to meeting our customers' requirements beyond their expectations. We provide them a complete solution thanks to our large product range that can be totally remote controlled.

To ensure the highest quality standards, all our products are solely manufactured at our plant in Southern Taiwan. Our know-how in terms of environment control and 30 years of experience drive us to be the Taiwan Market leader, and currently worldwide market challenger. We intend to maintain this dynamic and in that regard, we work with the same passion and desire as we have since the foundation of Taiwan **HiPoint**.

Kingco, C.C.  
CEO



**HiPoint provides the settable CO<sub>2</sub> range precise from 0 to 5,000ppm.**



Increases in CO<sub>2</sub> concentration cause global warming, rising sea-level and many other drastic ecological changes; these phenomena catch global attention. Countries are actively conducting research to slow down the increase of environmental CO<sub>2</sub> concentration. CO<sub>2</sub> levels in Europe have risen by 13.5% in the past 30 years.



Excessive CO<sub>2</sub> concentration also results in greenhouse effect; rising sea-level also reduces land area. Climate changes such as torrential rain and drought are associated with high atmospheric CO<sub>2</sub> concentrations. These changes can damage the ecosystem, natural resources and biodiversity.



CO<sub>2</sub> is the best fertilizer for plants. Plants need CO<sub>2</sub> to conduct photosynthesis, and CO<sub>2</sub> makes plants grow strong and thrive. HiPoint applies PID technology to provide precise CO<sub>2</sub> concentration to plants.



One tree can absorb about 5023g of CO<sub>2</sub> and produce about 3600g O<sub>2</sub> per day. One hectare of forest can absorb about 1T CO<sub>2</sub> and produce about 7000g O<sub>2</sub> per day.



**Response to UN SDGs**





SMALL SIZE



701

721

MIDDLE SIZE

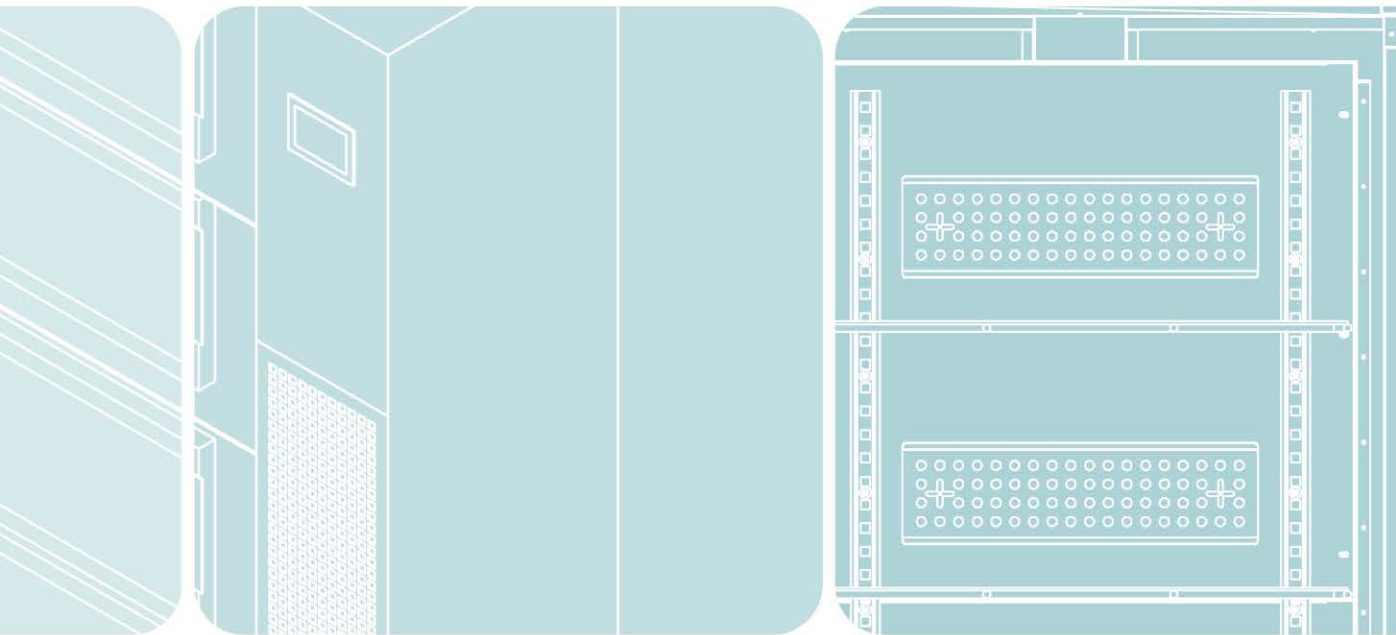


400

740

600

740-2D



LARGE SIZE



1200

2300

1300

MULTI COMPARTMENT



700

750

313

HIGH LIGHT INTENSITY



230

130

650

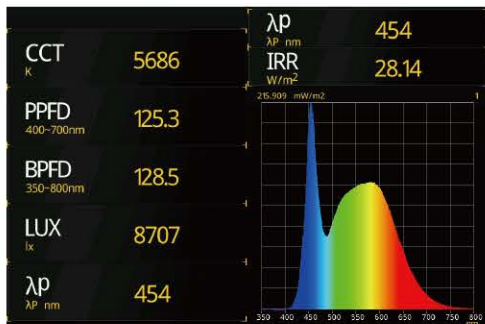
# Growth Light Type



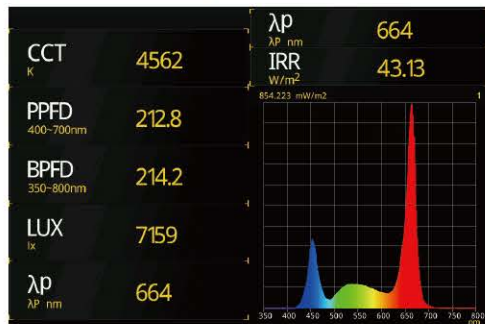
## Light Specifications

Models	LED T8	LED TRGB	LED Z190	LED Z1N	LED Z1NS	LED Z4N	LED Z41N	LED Z4WN	LED Z9	LED Z16
Intensity ( $\mu\text{mol}\cdot\text{s}^{-1}\cdot\text{m}^{-2}$ @15cm)	120 4 tubes	200 4 tubes	400	400	200	700	700	700	1300	500
Control	Steps	Steps/ 0%-100%	0%-100%	0%-100%	0%-100%	0%-100%	0%-100%	0%-100%	0%-100%	0%-100%
Size (cm)	30/60/120	120	40 × 60	40 × 60	40 × 50	40 × 60	40 × 60	40 × 60	40 × 60	28 × 40

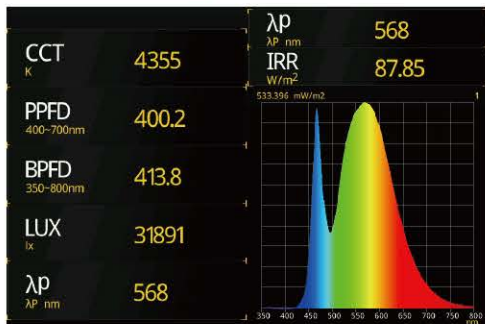
### LED T8



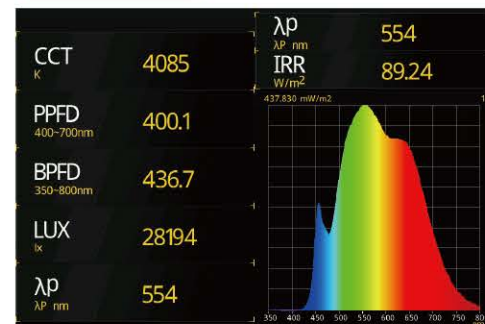
### LED TRGB



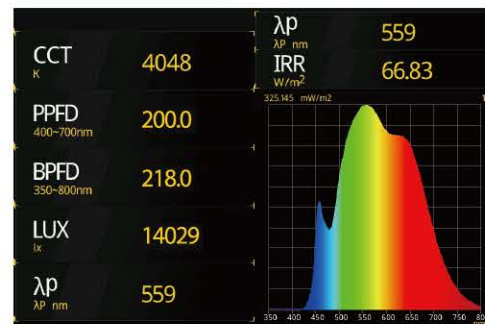
### LED Z190



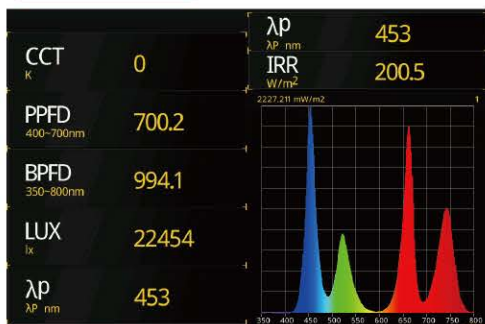
### LED Z1N



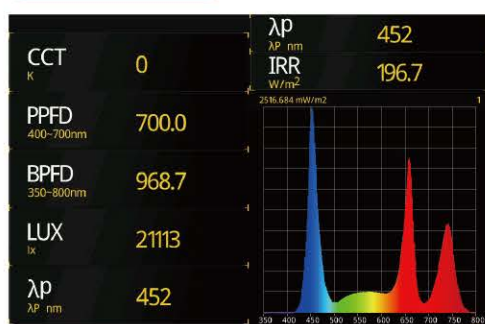
### LED Z1NS



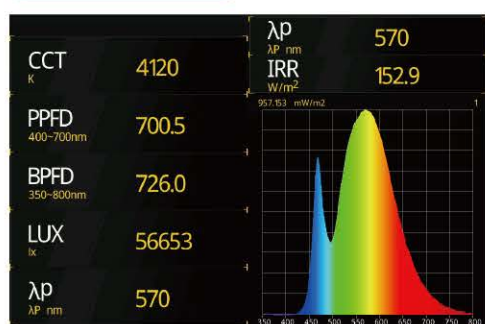
### LED Z4N



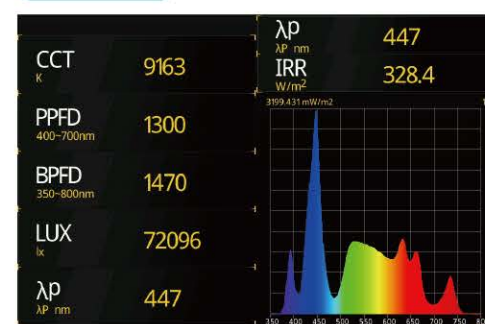
### LED Z41N



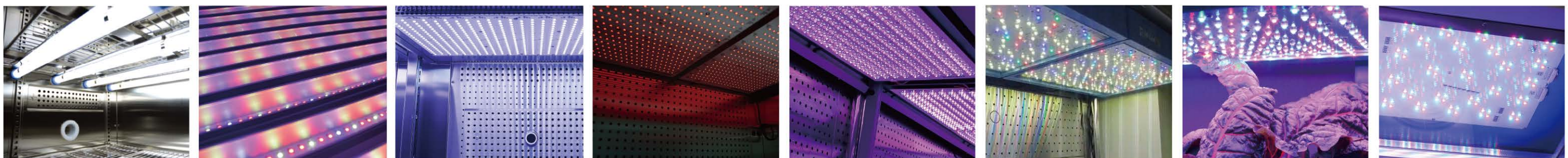
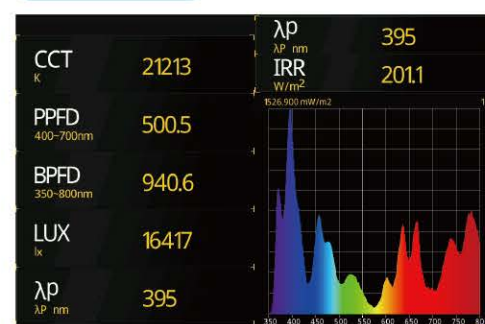
### LED Z4WN



### LED Z9



### LED Z16



from left to right: T8 / TRGB / Z190 / Z4N-R / Z41N / Z9 / Customized / Z16

## Technical Data

### Area of Application

Our factory standard defines the measurement methods and general conditions to determine and verify technical DATA intended for publication.

### Inner Efficient Working Volume

The working volume is the part of the inner chamber, in which compliance with the published technical DATA is guaranteed. It results from reducing the inner chamber diameter by at least 10% in all directions.

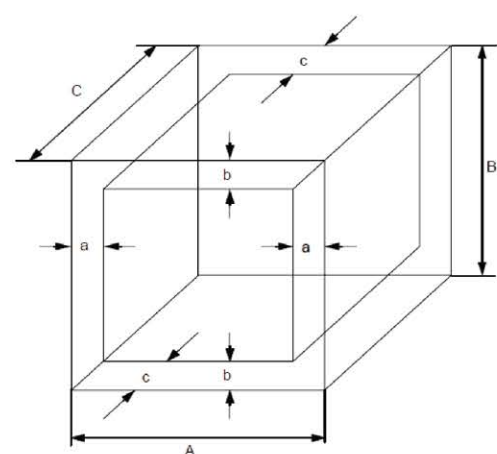
### Steady-State Condition

The steady-state condition is the operating state during which the values of all controlled parameters (temperature, humidity, CO<sub>2</sub> concentration) permanently do not vary by more than the maximum uniformity (variation) of all controlled parameters specified for the respective chamber at any point within the usable space.

This is the reason why Taiwan HiPoint Corporation always mentions the **Inner Efficient Working Volume** instead of the total volume concerning its chambers as the environment uniformity and stability DATA.

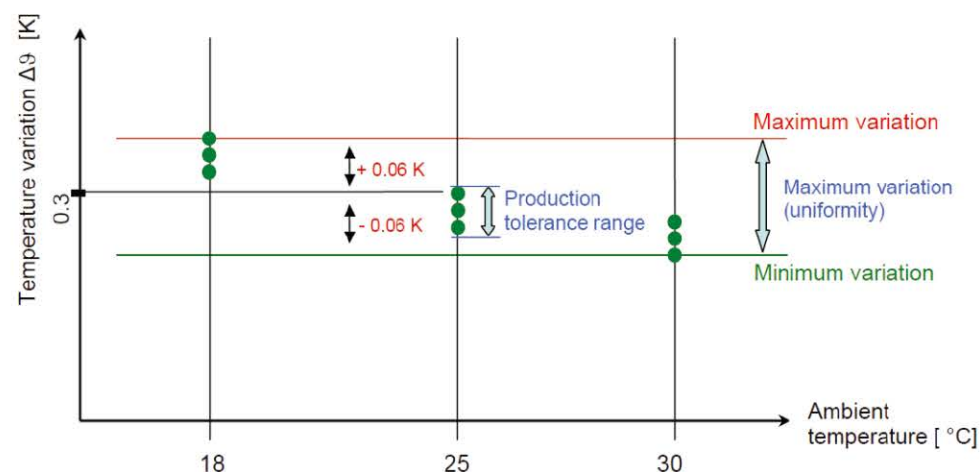
### Fresh Air Exchange

Temperature, humidity, CO<sub>2</sub> concentration uniformity, stability, and recovery times change, depend on the difference of conditions between the usable volume and ambient atmospheric conditions.



A, B, C = internal dimensions (W, H, D)  
a, b, c = wall clearances

$$\begin{aligned} a &= 0.1 \cdot A \\ b &= 0.1 \cdot B \\ c &= 0.1 \cdot C \end{aligned}$$

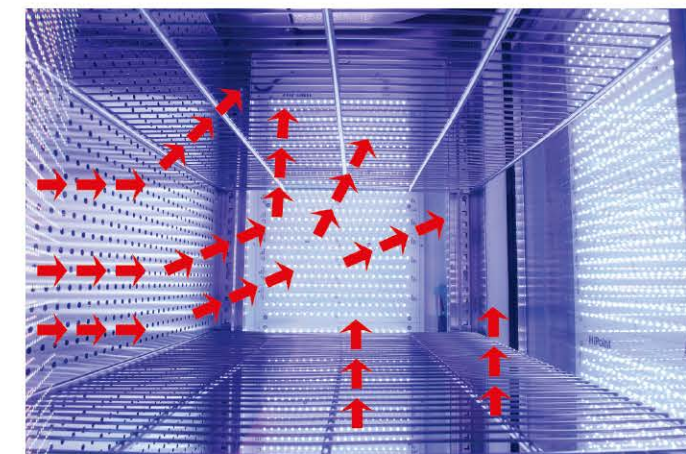


## Airflow

### Airflow Circulation

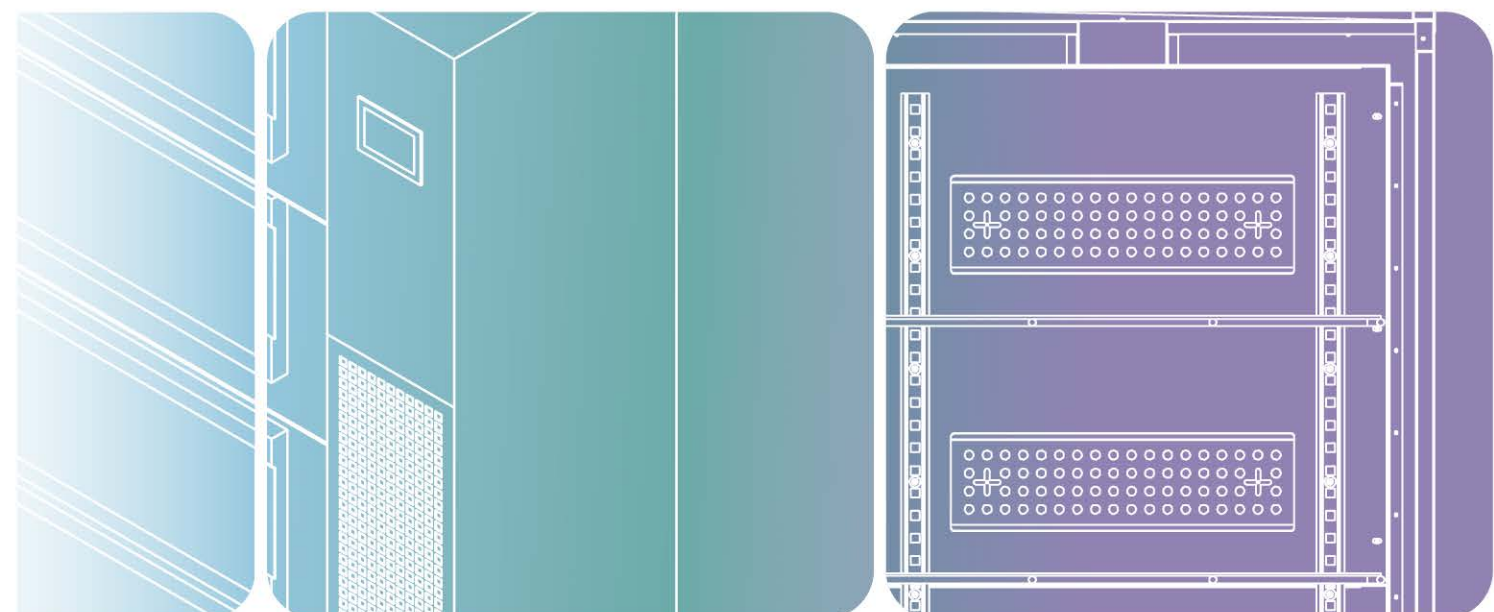
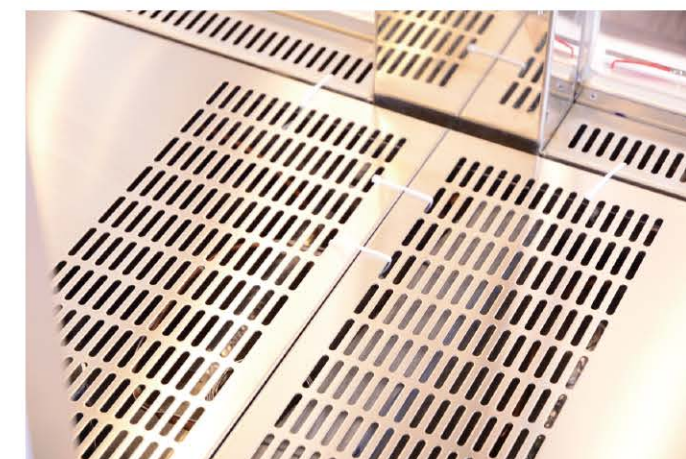
#### Horizontal Back to Front Airflow:

- This airflow is usually used for small plants such as Arabidopsis
- The nearest to the natural conditions' airflow
- The maximum available space
- Uniform temperature across the shelf



#### Vertical Upward Airflow:

- Ideal for tissue culture chambers to avoid condensation inside the petri dish
- Upward uniform laminar flow through the plants
- For small plants as Arabidopsis if each plant has an independent pot to let the air circulates between them
- For tall plants using a high-intensity light



## Specifications Overview

F = Temperature + Growth Light FH = Temperature + Growth Light + Humidity Control FHC = Temperature + Growth Light + Humidity + CO <sub>2</sub> control						
Type	Model No.	Capacity (L)	Temperature Control Range, Lights on (degrees)	Standard No. of Tier	Max. No. of Tier	Max. No. of the LED Panel
Lighting Downward Growth Chamber (Horizontal Lighting)	F-701	130	10-45	2	2	2
	F-721	240		2	2	2
	F-400	370		3	4	4
	F-740	470		3	4	4
	F-600	580		3	4	4
	F-1200	800		3	4	8
	F-2300	1200		4	4	8
	F-1300	1400		4	5	10
	High Illumination Growth Chamber (Vertical Lighting)	F-650		380	10-45	5
F-130		540	5	15		6
F-230		1000	5	15		12
Multi-Compartment Growth Chamber	F-700	230 /compartment	10-45	1 (1 tier per compartment)	1 (1 tier per compartment)	2
	F-750	670 /compartment				6
	MT-313	225 /compartment				6

## Application



Model No.	Incubator	Plant Growth	Tissue Culture	Arabi-dopsis	Dros-ophila	Algae	Germi-nation	High Light	Multi Chamber
701	●	●	●	●	●	●			
721	●	●	●	●	●	●		●	
400									
740	●	●	●	●	●	●			
600	●	●	●	●	●	●	●	●	
740-2D									
1200	●	●	●	●	●	●	●	●	
2300	●	●	●	●	●	●	●	●	
1300		●						●	
700		●		●				●	●
750		●		●				●	●
313		●		●				●	●
130		●						●	
230		●		●				●	
650		●						●	

The applications for each chamber type is our recommendations and can be discussed directly for customization.

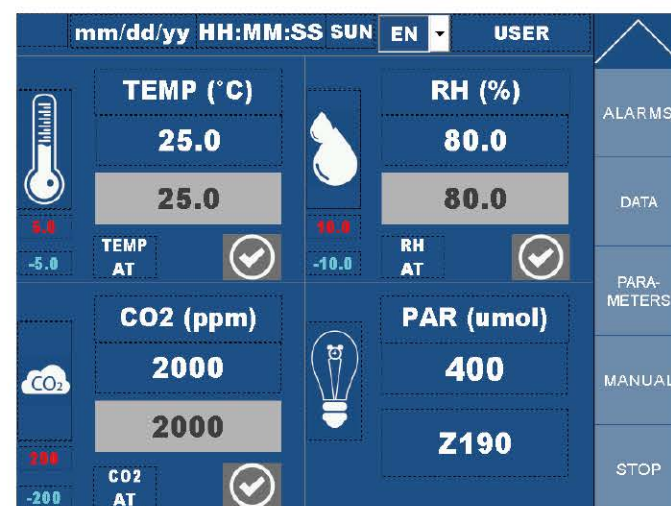
# Programming

## Human Machine Interface

Temperature, humidity, CO<sub>2</sub>, multi-wavelength independently adjustable lighting, irrigation system, EC, pH level controlled easily with a color 4.3" or 7" large tactile interface for the intuitive programming.

## Programming

50 programs (24 steps each) for the step or ramp process. Select 8 programs to combine as a schedule, each program independently repeatable, the whole schedule repeatable too. The programs can be set to run once or repeat indefinitely. It is possible to add sensors and adjust the offset calibration through the touch-screen controller.



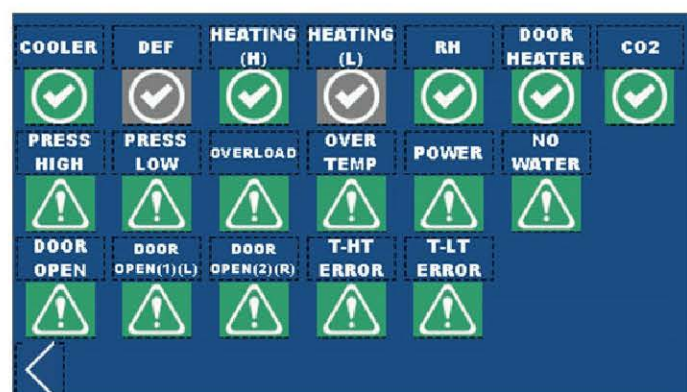
## Ramp Programming

Essential for the exact simulation of environmental conditions in research. User-friendly ramp programming. Thanks to the "Celsius" standard software, an unlimited amount of different set values of temperature, humidity, CO<sub>2</sub>, and lights can be combined on-time ramps.



## On-board Diagnostics

On-board diagnostics, door open, high/low pressure, and chamber off and power failure event logging to improve troubleshooting abilities. The most recent 1000 alarms appear clearly on the display and can be retrieved through any connected computer or Internet-connected PC.



# Safety

## Datalog

Up to 60,000 records, all processes are automatically logged every five minutes. Logging time is adjustable on request. Output parameter that is being controlled and monitored value displayed and can be exported to a USB key for analysis (Excel file). Direct connection with a computer (PC) for monitoring and control, or connection via the Internet to control the unit is optional.

TIME	DATE	TEMP PV	TEMP SV	RH PV	RH SV	CO2 PV	CO2 SV	COOLER	RH
14:28:19	06/08/2019	24.5	25.0	78.4	80.0	2013	2000	1	1
14:33:22	06/08/2019	25.3	25.0	80.1	80.0	2001	2000	1	1
14:38:27	06/08/2019	25.0	25.0	80.9	80.0	1997	2000	1	1
14:43:31	06/08/2019	25.0	25.0	80.0	80.0	2000	2000	1	1
14:48:19	06/08/2019	25.2	25.0	80.1	80.0	2000	2000	1	1
14:53:22	06/08/2019	25.1	25.0	80.0	80.0	2002	2000	1	1

## Safety

To protect your experiments from unintended changes, access to User, Manager, and Service Engineer levels is protected by four digitals changeable passwords. The password function can be deactivated by Service Engineer level users in case of safe use. Power On/Off is protected by key lock to avoid unintended power off action.



## Alarms

Audible and color-coded alarms are displayed on the touchscreen to alert about the deviation of conditions within the chamber. Three levels of protection: Primary tracking alarm, secondary and tertiary levels of limit alarms for visual and audible (buzzer) signal for high and low temperature, humidity, CO<sub>2</sub> values.

Trigger	Message	Recovery
114415	08/28/2019 1st Door not close	114819 08/28/2019
115504	08/28/2019 1st Door not close	120159 08/28/2019



# F / FH / FC / FHC-130

**CE** IEC-61010  
EN 61326-1:2021  
EN 61010-1:2010+A1:2019

- Internal** Stainless Steel or White Coated
- External** Coated steel
- Controller** PID microprocessor control, multi program, LED touchscreen 7" HMI
- Single door (front and back)** Open right outside, 1st fully insulated, 2nd safety anti-condensation tempered glass door
- Single door (two side)** Open right outside, 1st fully insulated, 2nd safety anti-condensation tempered glass observation window
- Installation** 4 caster wheels with leveling feet
- Communication**
  - USB
  - Ethernet LAN



## Further Data

Temperature control range (lights off)	°C	0 - 60
Temperature control range (lights on)	°C	10 - 45
Setting temperature accuracy	°C	0.1
Humidity control range (light off)	%	50 - 95
Humidity control range (light on)	%	50 - 85
Setting humidity accuracy	%	1
CO <sub>2</sub> control range	ppm	Ambient to 5000
Setting CO <sub>2</sub> accuracy	ppm	1
Available light type	model	Z190 / Z4N / Z41N / Z4WN / Z9
Forced air circulation	type	Vertical
Growth area	m <sup>2</sup>	0.33 / tier
Growth height	cm	5 tiers: 26 / 4 tiers: 32
Data logging		60,000 records
Alarm record	Y/N	Yes
USB Data export	Y/N	Yes
Access port	unit	0

# 130 Series



<b>Structure</b>	<b>Volume</b>	<b>L</b>	<b>540</b>
	<b>Interior dimension</b>	<b>mm</b>	<b>W630 x D665 x H1300</b>
	<b>Exterior dimensions</b>	<b>mm</b>	<b>W1030 x D1070 x H2050</b>
	<b>Footprint</b>	<b>m<sup>2</sup></b>	<b>1.1</b>
	<b>Max. number of tiers</b>	<b>tiers</b>	<b>5</b>
	<b>Max. load per tray</b>	<b>kgs</b>	<b>30</b>

<b>Safety Device</b>	<b>Password</b>	<b>Display / Control / Parameter passwords</b>
	<b>Temperature alarms (Primary)</b>	<b>Settable high/low tracking alarm following set point</b>
	<b>Temperature alarms (Secondary)</b>	<b>Settable high/low tracking temperature limit set point</b>
	<b>Temperature alarms (Tertiary)</b>	<b>Factory default mechanical high/low temperature protection</b>
	<b>Compressor safety</b>	<b>Delay start, over temperature, over pressure protection</b>
	<b>Electric safety</b>	<b>Over current protection</b>

<b>Accessories &amp; Options</b>	<b>Additional wire tray</b>	<b>Perforated stainless steel tray</b>
	<b>Reinforce wire tray</b>	<b>Inner socket</b>
	<b>Additional temperature sensor</b>	<b>Additional humidity sensor</b>
	<b>Additional CO<sub>2</sub> sensor</b>	<b>Additional access port</b>
	<b>Humidity monitoring</b>	<b>CO<sub>2</sub> monitoring</b>
	<b>CO<sub>2</sub> flask injection</b>	<b>CO<sub>2</sub> up to 5%</b>
	<b>CO<sub>2</sub> up to 20%</b>	<b>Low temperature</b>
	<b>Low humidity</b>	<b>VNC remote control</b>



# F / FH / FC / FHC-230

# 230 Series



- Internal** Stainless Steel or White Coated
- External** Coated steel
- Controller** PID microprocessor control, multi program, LED touchscreen 7" HMI
- Doors (front and back)** Open right and left outside, 1st fully insulated, 2nd safety anti-condensation tempered glass door
- Single door (right side)** Open right outside, 1st fully insulated, 2nd safety anti-condensation tempered glass observation window
- Single door (left side)** Open left outside, 1st fully insulated, 2nd safety anti-condensation tempered glass observation window
- Installation** 6 caster wheels with leveling feet
- Communication**
  - USB
  - Ethernet LAN

**CE** IEC-61010  
EN 61326-1:2021  
EN 61010-1:2010+A1:2019



## Further Data

Temperature control range (lights off)	°C	0 - 60
Temperature control range (lights on)	°C	10 - 45
Setting temperature accuracy	°C	0.1
Humidity control range (light off)	%	50 - 95
Humidity control range (light on)	%	50 - 85
Setting humidity accuracy	%	1
CO <sub>2</sub> control range	ppm	Ambient to 5000
Setting CO <sub>2</sub> accuracy	ppm	1
Available light type	model	Z190 / Z4N / Z41N / Z4WN / Z9
Forced air circulation	type	Vertical
Growth area	m <sup>2</sup>	0.67 / tier
Growth height	cm	5 tiers: 23 / 4 tiers: 29
Data logging		60,000 records
Alarm record	Y/N	Yes
USB Data export	Y/N	Yes
Access port	unit	0

<b>Structure</b>	<b>Volume</b>	<b>L</b>	<b>1000</b>
	<b>Interior dimension</b>	<b>mm</b>	<b>W1300 x D670 x H1170</b>
	<b>Exterior dimensions</b>	<b>mm</b>	<b>W1600 x D1080 x H2050</b>
	<b>Footprint</b>	<b>m<sup>2</sup></b>	<b>1.72</b>
	<b>Max. number of tiers</b>	<b>tiers</b>	<b>5</b>
	<b>Max. load per tray</b>	<b>kgs</b>	<b>40</b>

<b>Safety Device</b>	<b>Password</b>	<b>Display / Control / Parameter passwords</b>
	<b>Temperature alarms (Primary)</b>	<b>Settable high/low tracking alarm following set point</b>
	<b>Temperature alarms (Secondary)</b>	<b>Settable high/low tracking temperature limit set point</b>
	<b>Temperature alarms (Tertiary)</b>	<b>Factory default mechanical high/low temperature protection</b>
	<b>Compressor safety</b>	<b>Delay start, over temperature, over pressure protection</b>
	<b>Electric safety</b>	<b>Over current protection</b>

<b>Accessories &amp; Options</b>	<b>Additional wire tray</b>	<b>Perforated stainless steel tray</b>
	<b>Reinforce wire tray</b>	<b>Inner socket</b>
	<b>Additional temperature sensor</b>	<b>Additional humidity sensor</b>
	<b>Additional CO<sub>2</sub> sensor</b>	<b>Additional access port</b>
	<b>Humidity monitoring</b>	<b>CO<sub>2</sub> monitoring</b>
	<b>CO<sub>2</sub> flask injection</b>	<b>CO<sub>2</sub> up to 5%</b>
	<b>CO<sub>2</sub> up to 20%</b>	<b>Low temperature</b>
	<b>Low humidity</b>	<b>VNC remote control</b>
	<b>Antimicrobial interior</b>	

