



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



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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 CO₂ range precise from 0 to 5,000ppm.



Increases in CO₂ 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 CO₂ concentration. CO₂ levels in Europe have risen by 13.5% in the past 30 years.



Excessive CO₂ 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 CO₂ concentrations. These changes can damage the ecosystem, natural resources and biodiversity.



CO₂ is the best fertilizer for plants. Plants need CO₂ to conduct photosynthesis, and CO₂ makes plants grow strong and thrive. HiPoint applies PID technology to provide precise CO₂ concentration to plants.



One tree can absorb about 5023g of CO₂ and produce about 3600g O₂ per day. One hectare of forest can absorb about 1T CO₂ and produce about 7000g O₂ per day.



Response to UN SDGs





SMALL SIZE



701

721

MIDDLE SIZE

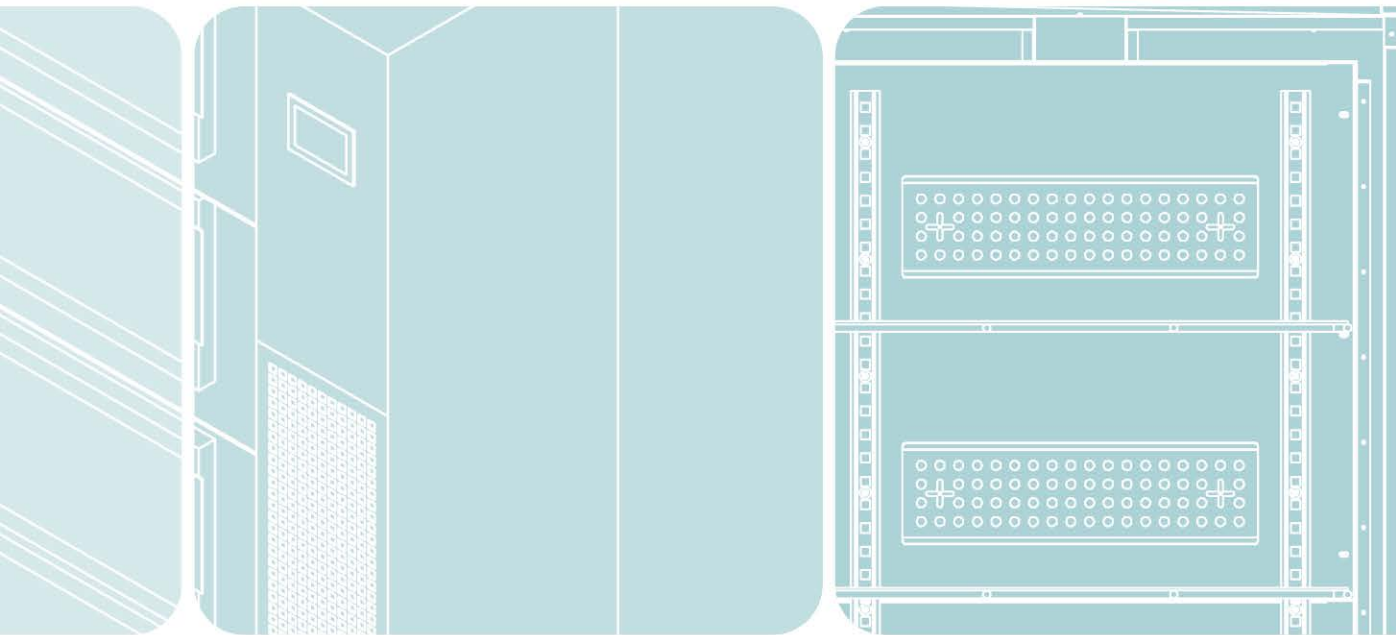


400

740

600

740-2D



LARGE SIZE



1200

2300

1300

MULTI COMPARTMENT



700

750

313

HIGH LIGHT INTENSITY



230

130

650

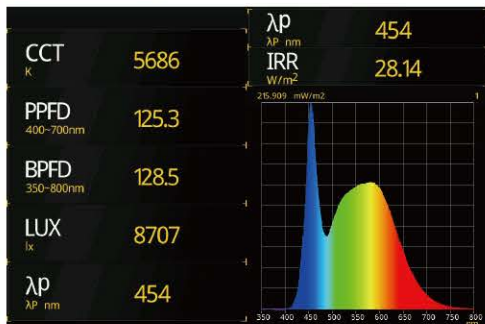
Growth Light Type



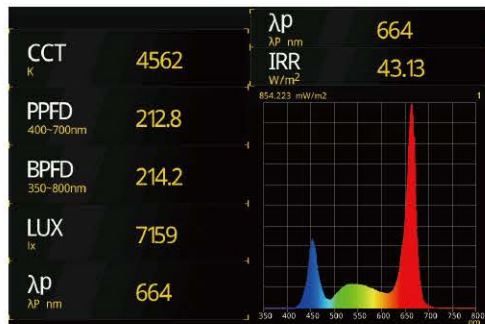
Light Specifications

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

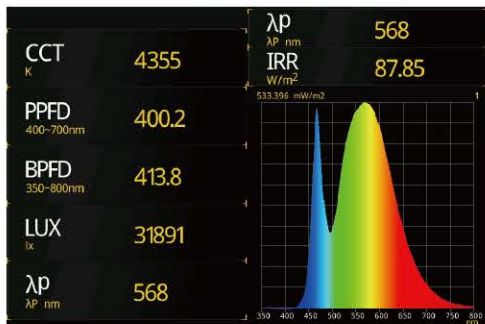
LED T8



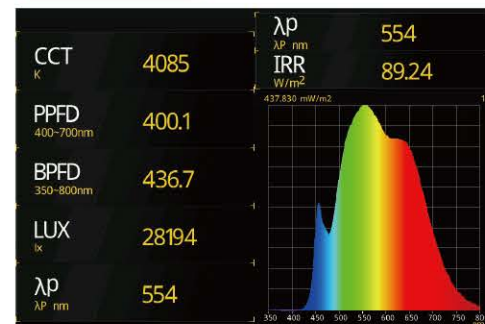
LED TRGB



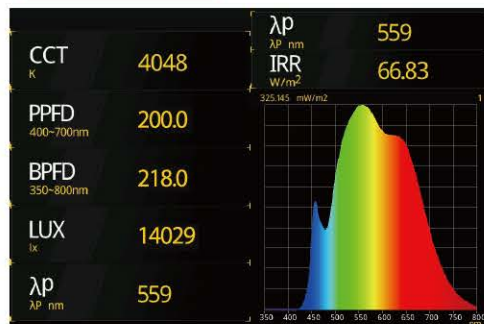
LED Z190



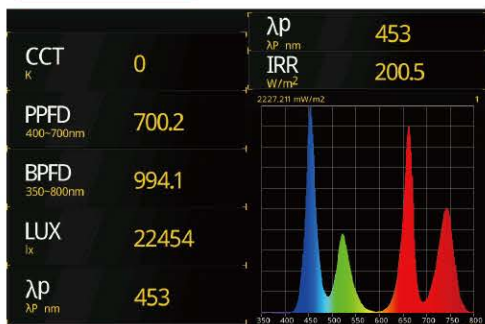
LED Z1N



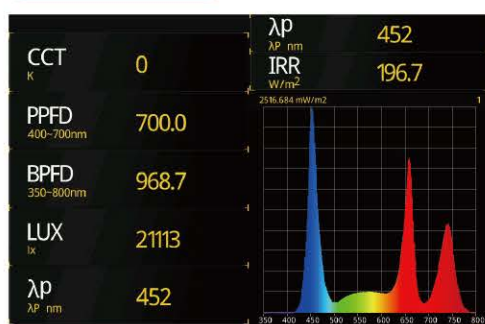
LED Z1NS



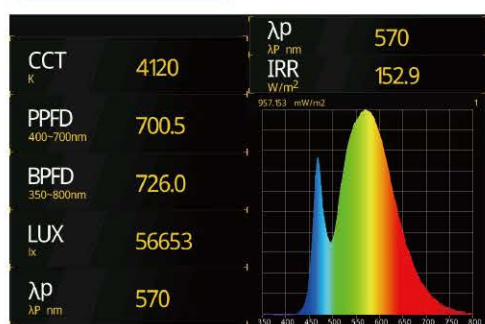
LED Z4N



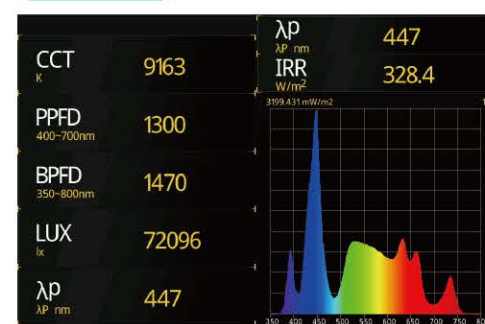
LED Z41N



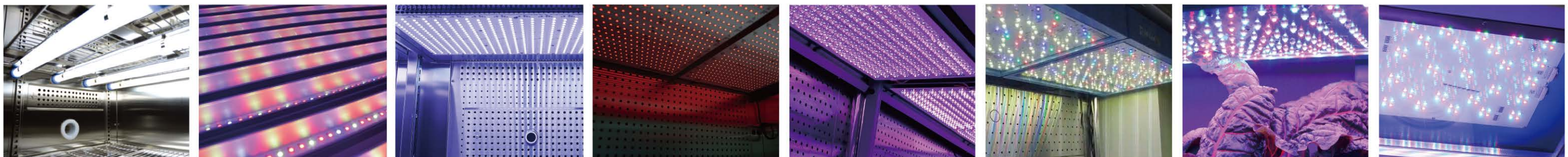
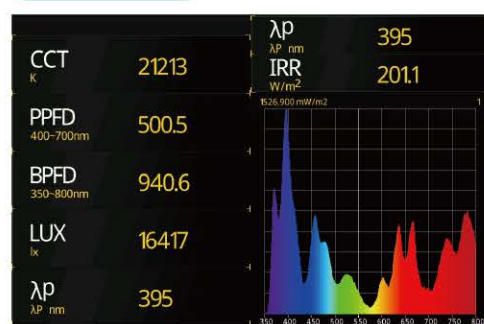
LED Z4WN



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.

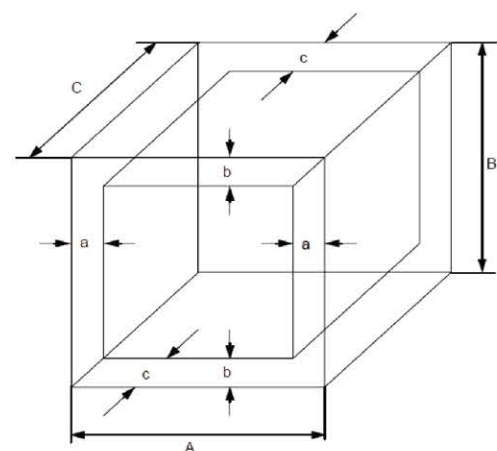
Steady-State Condition

The steady-state condition is the operating state during which the values of all controlled parameters (temperature, humidity, CO₂ 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.

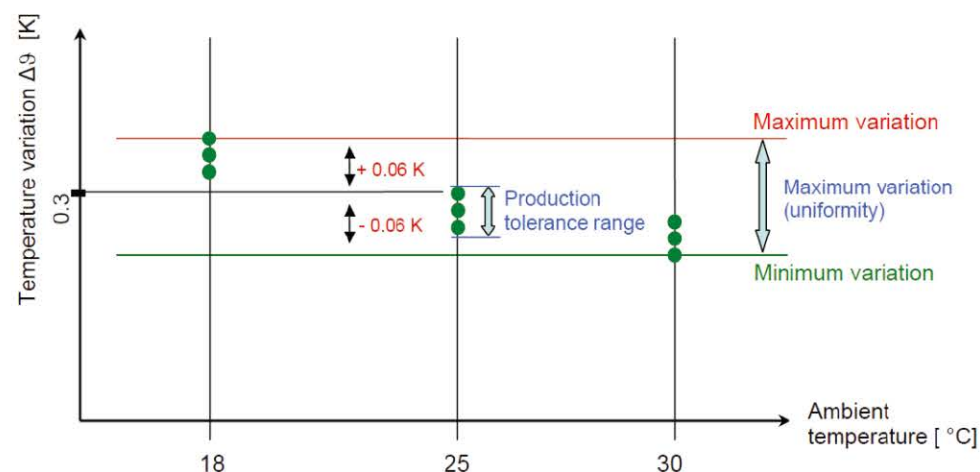
Fresh Air Exchange

Temperature, humidity, CO₂ 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

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

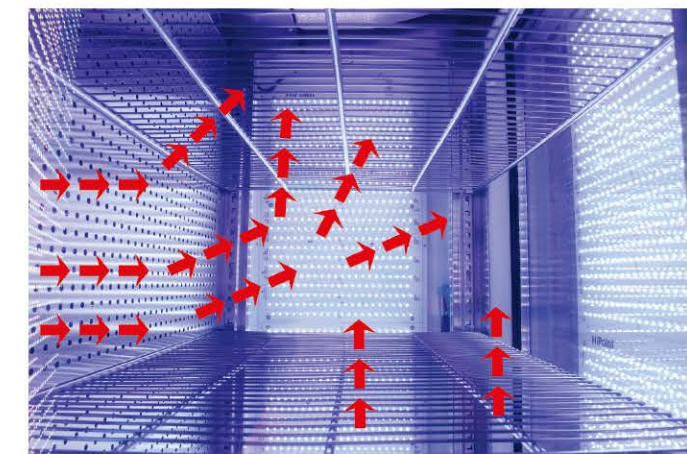


Airflow

Airflow Circulation

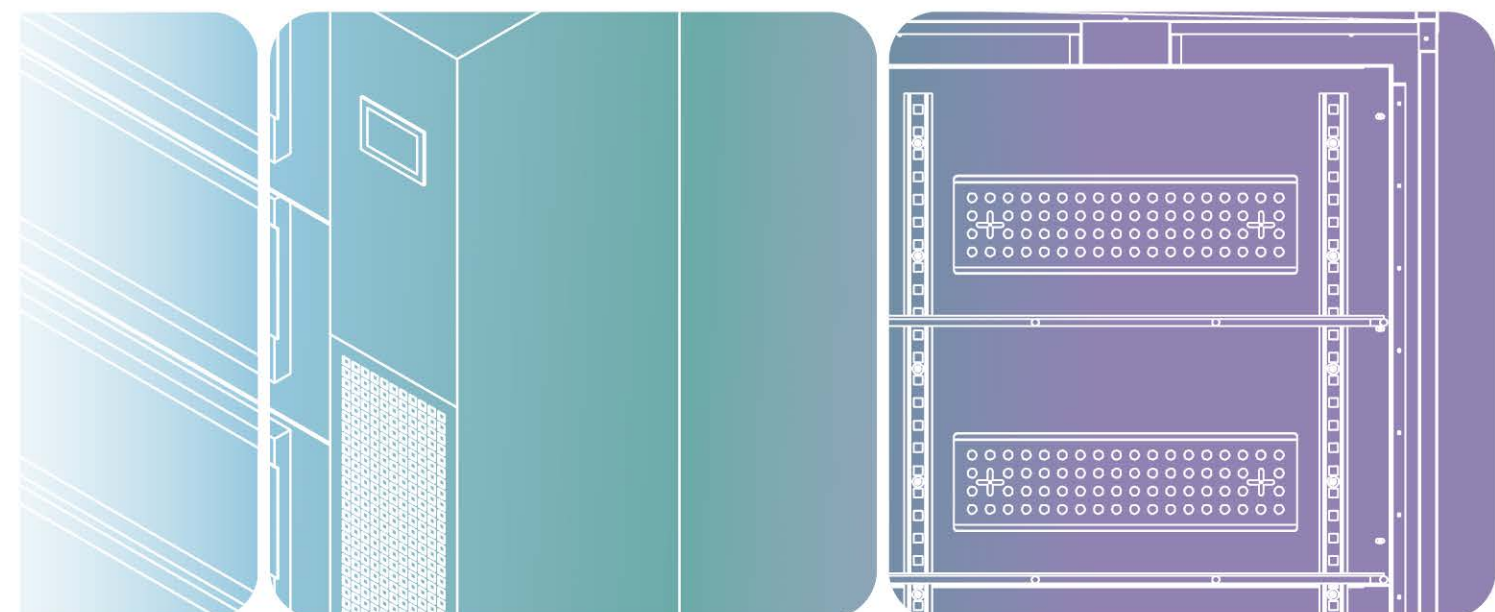
Horizontal Back to Front Airflow:

- 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

Application



F = Temperature + Growth Light
FH = Temperature + Growth Light + Humidity Control
FHC = Temperature + Growth Light + Humidity + CO₂ 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

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.

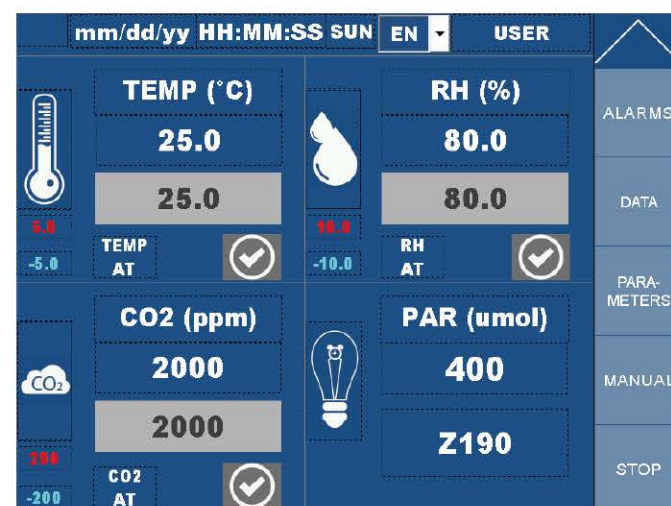
Programming

Human Machine Interface

Temperature, humidity, CO₂, 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.



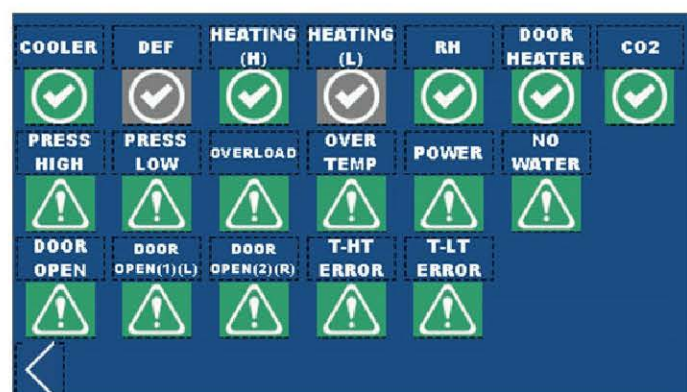
Ramp Programming

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, CO₂, 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, CO₂ 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-700

CE IEC-61010
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Internal Stainless Steel or White Coated

External Coated steel

Controller PID microprocessor control, multi program, LED touchscreen 7" HMI

Single door Open left outside, safety anti-condensation tempered glass observation window with tight cover

Installation 4 caster wheels with leveling feet

Communication  



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 ₂ control range	ppm	Ambient to 5000
Setting CO ₂ accuracy	ppm	1
Available light type	model	Z190 / Z4N / Z41N / Z4WN / Z9 / Z16
Forced air circulation	type	Back to front
Growth area	m ²	0.29 / tier
Growth height	cm	1 tier: 65 / 2 tiers: 30
Data logging		60,000 records
Alarm record	Y/N	Yes
USB Data export	Y/N	Yes
Access port	unit	2

700 Series



Structure	Volume	L	230 / compartment
	Interior dimension	mm	W700 x D515 x H650
	Exterior dimensions	mm	W1250 x D920 x H2020
	Footprint	m ²	1.15
	Max. number of tiers	tiers	2 / compartment
	Max. load per tray	kgs	35

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

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

