GROWTH CHAMBERS

JSR

(주) 제이에스리서치

JS Research Inc.

Growth CHAMBER

CLIMATIC CONTROL Phytotron

Control Performance

- High precision Digital PID Microprocessor controller and cooling system controls temperature from +0℃ to 60 ℃
- Humidifier controls humidity from 30% to 85% RH with excellent temperature control
- Bulit-in light sensor in chamber measure and display light intensity in LUX
  Combination of maximum 8 level light control can create sixteen light intensity gradation.
- Optional CO_2 control with precise NDIR-Diffusion Sensor controls CO_2 concentration from ambient approx. 700 ppm to 5000 ppm
  Concentration can be expressed in % as well
- Program mode capable to create various climatic conditions of temperature, humidity, lighting and CO_2 conc. with time duration up to 11 Segments 999 cycles or unlimited repeating operation with easy-to-use 3-line back light LCD display and alpha numeric key pad

Temp. +0 ℃ ~ 60 ℃

Humidity 30 ~ 98% RH

Lighting 0 ~ 40,000 Lux

CO_2 Conc. amb.~5000 ppm (%)

Program Controller

Photoperiodic Control

3-D Illumination Plant Growth Chamber

JSPG-Series

JSPG-1500C 3-Side Illumination Plant Growth Chamber provides reliable controlled climatic condition of temperature, humidity, lighting and CO_2 concentration.

Ideal to growing plant, plant tissue culture or any other laboratory experiments needs controller climatic simulation.

1512 L large capacity and tall height of the chamber suitable to growing larger plants up to 1.2 m.

Combination of top and two side light bank with HQI and fluorescent lamps provide light intensity up to 50,000 LUX.

Top Illumination

JSGC-Series

JSGC-Series Top Illumination Plant Growth Chamber provides reliable controlled climatic condition of temperature, humidity, lighting and CO_2 concentration

Ideal to growing plant, plant tissue culture or any other laboratory experiments needs controller climatic simulation.

Various choice of capacity from 432L ~ 1512 L suitable to growing larger plants up to 1.2 m.

Light bank on the top with HQI and fluorescent lamps provide light intensity up to 40,000 LUX.

3-Side Illumination

JSPC-Series

JSPC-Series 3-Side Illumination Plant Growth Chamber provides reliable controlled climatic condition of temperature, humidity, lighting and CO_2 concentration

Ideal to growing plant, plant tissue culture or any other laboratory experiments need controlled climatic simulation.

Various choice of capacity from 200L ~ 964 L for tissue culture and plants growing.

Light bank on the 3-side with fluorescent lamps provides light intensity up to 30,000 LUX.

제품상담 : 041-856-3677 Sales : +82-41-856-3677 info@jsresearch.co.kr

Controller

JSC-4CP Programmable Controller

- High precision Digital PID Microprocessor controls temperature, humidity, lighting and CO_2 concentration in one integrated unit with easy to use 4-line back-light LCD display interface
- Constant temperature, humidity, lighting and CO_2 conc. operation with automatic OFF timer
- Programmable operation capability of various climatic conditions of temperature, humidity, lighting and CO_2 conc. with time duration up to 11 Segments 999 cycles or unlimited repeating operation
- Calibration and auto-tuning function
- Class A Pt-100 Ω temperature sensor
- Precision electronic humidity sensor
- Built-in LUX Meter in chamber to measure light intensity
- The most accurate NDIR-Diffusion (Infra Red) CO_2 Sensor
- Automatic defrost cycle

- 정밀한 PID 콘트롤러는 온도, 습도, 조도 및 CO_2 농도를 통합적으로 제어하고 back-light LCD 창을 통해 손쉽게 조작할 수 있음
- 정치 제어 기능은 고정된 온도, 습도, 조도 및 CO_2 농도에서 연속 작동 하거나 타이머 설정
- 프로그램 제어 기능은 온도, 습도, 조도 및 CO_2 농도등 다양한 환경 조건을 시간에 따라 11 segment 999회 또는 무한 반복 작동
- 온도, 습도, 조도, CO_2 농도 보정, 오토튜닝 기능
- Class A Pt-100Ω 온도센서
- 전자식 습도센서
- 챔버 내부 조도 센서
- 정밀한 적외선 방식 (NDIR-Diffusion) CO_2 농도 센서
- 자동 제상 시스템

Performance & Convenience

Light Bank System

- Light Bank System with HQI and Fluorescent lamps
- Combination of 8-Level Lamp Control creates over 16 light intensity gradation
- Lamp-on-Delay System turn on lamp one by one which provides gradual increase of light intensity

Chamber

- Stainless Steel 304 chamber
- Removable and height adjustable shelf
- Internal LUX meter sensor
- Built-in humidifier and automatic water supply
- Low water level sensor and alarm

Maintenance

- Easy to access Light Bank System for convenient maintenance
- Easy to maintain refrigeration system

Infra-Red CO_2 Sensor

- High precision Dual wavelength NDIR Diffusion sensor to measure and control CO_2 concentration
- 적외선 방식 CO_2 센서로 챔버 내부의 이산화탄소 농도를 정밀하게 제어

Performance

- Forced air circulation of controlled temperature and humidity to achieve excellent thermal uniformity
- Durable Stainless Steel 304 Sheath Heater and copper-aluminum finned evaporator
- Temperature control within ± 0.1°C resolution
- Humidity control within ±1.0% RH resolution
- Lighting control from 0 ~ 50,000 Lux by 8-Step light intensity for photoperiodic Day-Night simulation
- Lamp-on-Delay System by turn on lamp one by one which provides gradual increase of light to eliminate sudden light intensity change
- CO_2 concentration control within ±1 ppm (1%) resolution

- 내구성과 내부식성이 뛰어난 Stainless Steel 304 재질의 히터와 냉각 효율이 뛰어난 냉각기
- 부드러운 공기 순환식 설계로 균일한 온도 분포
- ± 0.1°C 해상도의 온도제어능력
- ± 1.0 % RH 해상도의 상대습도 제어능력
- 0 ~ 40,000 Lux 의 조도를 8 단계로 제어하는 일광조절기능
- 각 단계별로 램프가 한 개씩 순차적으로 점등 되어 급격한 조도의 변화에 의한 식물체의 스트레스를 방지
- ±1 ppm (1%) 해상도의 CO_2 농도 제어능력

Convenience

- Outer door with self adhesive magnetic packing
- Inner glass door with high density silicone packing and air-tight door lock (depends model)
- Removable and height adjustable shelf by 25mm spacing
- Easy to access Light Bank System for convenient maintenance
- Corrosion resistant Stainless Steel 304 (ASTM 304) chamber
- Auto-defrost system, user settable interval and time
- Built-in casters for easy transport

- 자석 접착방식의 외부 도어 패킹
- 내부 유리 도어와 고밀도 실리콘 패킹, 밀착식 도어락은 기밀성이 뛰어남 [일부모델]
- 내부식성이 강한 Stainless Steel (SUS304) 챔버
- 25mm 간격으로 높이 조절 가능한 선반
- 라이트뱅크 시스템은 손쉽게 조명기구를 교체할 수있음
- 바퀴와 수평조절좌를 장착하여 설치, 이동, 평형유지 기능

Safety

- **OVER TEMP. CUT-OFF**
  Analog system cut-off heater 10% above set temp.
- **MAX TEMP CUT-OFF** heater and AUDIO VISUAL ALARM when if +1°C above maximum limit
- **SENSOR DISCONNECTION ALARM**
- **LOW WATER LEVEL ALARM**
- **DRY BURN PROTECTION OF HUMIDIFIER**
- **OVER CURRENT CUT-OFF :** Electrical Leakage Breaker

- **과열방지장치**
  콘트롤러 오류로 설정온도 초과 시 히터차단
- **최고온도알람기능 :** 한계온도+1°C 초과시 히터 차단
- **센서단락알람**
- **저수위 알람**
- **누전차단기 :** 전기 누설 시 주전원 차단

Growth CHAMBER

JSGC-Series TOP ILLUMINATION Wide Range

Specifications

Heating	Forced Air Convection
Cooling	CFC Free Air Cooled Compressor
Humidifier	Water Boiling Humidifier
Temp. Range	+0 °C ~ 60 °C (Light Off JSGC-960C)
	+10 °C ~ 60 °C (Light On JSGC-960C)
Accuracy	± 0.3 °C at 20.0°C 60% RH
Uniformity	± 1.0 °C at 20.0°C 60% RH
Temp. Sensor	Class A Pt-100 Ω Sensor
Humidity Range	30 ~ 98% RH (Sensor Range)
	30 ~ 85% RH (Control Range)
Accuracy	± 3.0 % RH at 20.0°C 60% RH
Humidity Sensor	Electronic Sensor
Illumination	0 ~ 40,000 Lux by 8-Step Combination
Light Sensor	Lux Meter 1 Lux resolution
CO_2 Range	ambient to 5,000 ppm (~ 20 %)
CO_2 Sensor	Dual Wavelength NDIR Diffusion
Controller	Programmable PID Control
	11 Segment 999 Cycle Repeat
Safety	Over-Temperature Cut-Off
	Over Current Cut-Off
	Low Water Level Cut-Off
Material	Body : Epoxy Powder Coated Steel
	Chamber : Stainless Steel 304
	Double Layer Vacuum Glass Ceiling on Light Bank
	Including PVC Coated Wire Shelf
Electric	220 ± 10% VAC 50/60Hz 1-Phase
Plug config.	Direct connect to 60 Amp ELB Mains

- Temp. +0 °C ~ 60 °C
- Humidity 30 ~ 85% RH
- Lighting 0 ~ 40,000 Lux
- CO_2 Conc. amb.~5000 ppm (%)
- Program Controller
- Timer *On / Off*
- Photoperiodic Control

Performance

- Forced air circulation of controlled temperature and humidity to achieve excellent thermal uniformity
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- ±1 ppm (1%) 해상도의 CO_2 농도 제어능력

Options

Art No.	Descriptions
OHC-100	CO_2 Control ~ 5,000 ppm with NDIR CO_2 Sensor supplied without CO_2 gas cylinder
OHC-101	2 Stage CO_2 Gas Regulator
OHC-102	Flow Meter
OHC-103	Metering Valve

Accessories

Art No.	Descriptions	
	PVC Coated Wire Shelf	
PHS-C13	for JSGC-420C	W570 x D580 mm
PHS-C12	for JSGC-960C	W870 x D880 mm
PHS-C11	for JSGC-1500C	W670 x D830 mm

Ordering Information

		JSGC-420C	JSGC-960C	JSGC-1500C
Chamber Volume (Capacity)		432L	972L	1512L
Dimensions	Inner	600 x 600 x 1200	900 x 900 x 1200	1400 x 900 x 1200
W x D x H mm	Outer	1180 x 850 x 2080	1480 x 1150 x 2080	1865 x 1250 x 2100
Temperature	Range	Light Off : +0°C ~ 60°C Light On :+10°C ~ 60°C w/o Humidity Control		
	Accuracy	± 0.3 °C at 20.0°C 60% RH (Light Off)		
	Uniformity	± 1.0 °C at 20.0°C 60% RH (Light Off)		
Humidity	Range	30 ~ 98% RH (Sensor Range) 30 ~ 85% RH (Control Range)		
	Accuracy	± 3.0 % RH at 20.0°C 60% RH		
	Uniformity	± 6.0 % RH at 20.0°C 60% RH		
Illumination	Range / Steps	6 Step	7 Step	8 Step
	Lamp Configuration	2 x 150W HQI 4 x 55W FPL	3 x 150W HQI 4 x 55W FPL	4 x 150W HQI 8 x 36W FPL
CO_2 Conc.	Range	ambient ~ 5,000 ppm (ambient ~ 20%)		
	Accuracy	± 50 ppm		
Controller		Programmable PID Control 11 Segment 999 Cycle Repeat		
Sensors		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO_2 Sensor		
No. of Shelves / Maximum No.		3 / 20	6 / 20	8 / 20
Heater Rating		4.0 kW	6.0 kW	8.0 kW
Refrigeration System		CFC Free Air Cooled Compressor		
Electric Requirement		220 VAC 50/60Hz 1P		
Power Rating		25 Amp	36 Amp	53 Amp
Plug Configuration		30 AMP	50 AMP	60 AMP ELB Mains