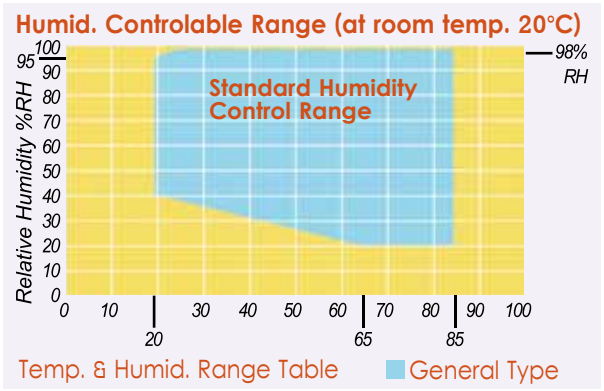
CCG/PCG-Series, (Programmable) Bench Top Constant Temperature & Humidity Chamber, 80 or 120 Liter

Benchtop Temperature&Humidity Test Chambers offer flexibility, uniformity and control accuracy required for cost effective testing for a variety of products. Ideal for testing smaller products such as computer components, automobile sensors or cellular phones, these chambers combine superior performance with compact design that is perfect for research and development or personal point-of-use testing. Available in two sizes, the Benchtop serie chambers allow you to cost effectively select the exact chamber that best meets your environmental test criteria. These chambers can be mounted in an instrument rack or will easily sit on a laboratory benchtop. This humidity chambers include an removable water storage tank, avoiding the need for water hook-ups.

PCG-80 PROGRAMER



CCG-80: **Fix point PID control LED display.**
PCG-80: **5 Programs. 50 steps. 999 cycles. LCD display**

Features:

- Viewing window with interior light.
- Stainless steel access port with plug, for convenient access to test items.
- Easily accessible service areas.
- Stainless steel internal and external chamber.
- Solid state heating switching.
- Refrigeration system: high efficency , maximum reliability & low vibration and low noise. The air cooled refrigeration is working with CFC free refrigerant. The total cooling circuits is working with solenoid valve bypass technique ensuring that the compressor will only be disconnected if cooling capacity has not been required for a prolonged period.
- Heating system: low mass electric resistance heater is located directly in front of the recirculating air blower.
- The PID microprocessor controllers with the solid state relays allows extremely precise & constant control.
- Adjustable stainless steel shelves.
- Optional 100mm chart recorder.

CCG-80 CONTROLLER

Model Controller	CCG-80	CCG-120
Model Programmer	PCG-80	PCG-120
Temp. range	-20°C~100°C	
Humid. range	20%~98% R.H	
Temp&Humid. constancy	±0.5°C±2.5% R.H	
Temp&Humid. uniformity	±1°C±3%R.H	
Heating up time	20°C~100°C within 30 min	
Pull down time	20°C~-20°C within 60 min	
Volume (Liter)	80liter	120liter
Interior dimensions(mm)	W400xD400xH500	W500xD400xH600
Exterior dimensions(mm)	W860xD810xH810	W960xD810xH970
Interior/Exterior material	Stainless steel plate (SUS304)/(SUS304) tough powder-coated	
Insulation	Rigid polyurethane foam	
Refrigeration system	Single stage refrigeration	
Safety devices	Refrigerator overload relay, refrigeration high pressure switch, protection relay protection fuse, boil dry protector, overheat protector, alarm viewing window	
Accessories	Shelves (freely adjustable) 2pcs. Chamber lamp	
Power source	AC220V 50/60Hz 1Φ	

CCG-100/150/250, Constant Temperature & Humidity Chamber

CCG-100

Airduct structure

It applies circular airflow design concept & forced convection simulated air circulation principle. The large power air circulating blades designed specially can produce higher air flow rate and guarantee high even and stable inner bag temperature and humidity.

Electronic humid. sensor

It is used for absolute precise humidity measurement. The humidifying and dehumidifying system is control led electronically.
ROTRONIC electronic humid. sensor can guarantee the reliability of humidity inspection even if the samples are changed frequently. The senor does not require maintenance.

Innovative refrigerating system

International famous brand refrigerant compressor and Germany EBM condenser applying 134a refrigerant and featuring fluorine free, environmental protection, precision and high efficiency are applied.

Test hole

One test hole with the diameter of 45mm made with special mould is arranged on the left and right of the incubator respectively for observation. Internal silica gel soft plugs are provided to make sure the temperature and humidity inside the incubator are not affected during the test.

Easy for maintenance

It is easy to maintain and clean condenser to improve the refrigerating performance and save energy.

RS232 interface

It is a special interface for PC. One software CD (suitable for simpl ified Chinese WINDOWS2000 or simpl ified Chinese WINDOWS XP operating system) is attached. Test program is written, monitored & saved with special PC software. Test data is directly displayed and printed with special PC software.

Ponded water inside inner bag can be discharged easily

The inner bag appl ies side, high, middle and low structures to discharge water easi ly and keep the incubator clean.

Temperature and humidity

Features:

- The incubator is made with imported NC machine tool and laser processing technology. The outside incubator body applies high quality cold rolling plate, which is strongly resistant to rusting. The inner bag applies SUS304 stainless plate
- The incubator bottom truckle is imported from Japan. Its direction is adjustable and it can be locked. The outside incubator body is sprayed with American Dupont powder.
- One test hole with the diameter of 45mm made with special mould is arranged on the left and right of the incubator respectively for observation. Two silica gel soft plugs are provided inside. Temperature and humidity
- The heat insulating material of incubator applies Germany Bayer freon-free polyurethane one-time foaming technology to improve the insulating property and rsduce-enerqy consumption. It can save over 30% energy in comparison with similar products. The overall strength of incubator is good.
- Rational airduct structure; balance type control method; imported special electric motor and blade are applied to make temperature and humidity distribution evener and greatly improve test precision and evenness of temperature and humidity.
- International famous brand refrigerant compressor and Germany EBM condenser applying 134a refrigerant and featuring fluorine free, environmental protection are applied and conform to the world trends.
- Programmed temperature and humidity control; micro-computer fuzzy control PID control; temperature priority and time priority; optional for the user. Intelligent programmed mode is applied. The control part applies high brightness super large LCD and fuzzy PID control method to be more humanized.
- Temperature sensor PT1 00 applies Honeywell product. The humidity sensor applies Swiss Rotronic capacitive sensor.
- Over-temperature protection, creepage protection, door open alarm, current failur;.e alarm and sensor alarm functions are provided to improve the safety. Meanwhile, automatic start, stop, timed operation, clock display and self recover after energization are provided.
- Automatic defrosting and manual defrosting functions are provided for long term test to solve the problem of temperature and humidity drifting.

Model	CCG-100	CCG-150	CCG-250
Convection method	Compulsory convection method		
Control method	Balance type		
Temperature range	-10°C ~ +85°C		
Humidity control scope	20 ~ 98%		
Temperature resolution	0.1°C		
Temperature fluctuation	±0.1°C		
Temperature evenness	±0.5°C (65°C)		
Humidity fluctuation	Within ± 1.5% (65°C)		
Working room temperature	5 ~ 35°C		
Insulating material	Overall foaming of polyurethane		
Programmed control	Fuzzy logistic PIO control method common operating mode/programmed operating mode		
Overall dimension(mm)	W590 x D733 x H1140	W665 x D733 x H1300	W765 x D773 x H1490
Inner dimension (mm)	W465 x D400 x H540	W540 x D400 x H700	W640 x D440 x H890
Weight	About 93KG	About 114.5KG	About 137KG
Effective volume	100L	151L	250L
Total power of heating and humidifying	1000W	1450W	2000W
Refrigerating power- refrigerant	175W,R134a	245W,R134a	270W,R134a
Water supply volume	Inside: 10 L Outside: 25 L		
Power voltage	AC-220V 50/60Hz		
Tray (standard configuration)	Two layers	Three layers	Three layers

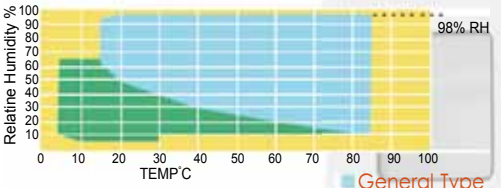
- Performance parameter test under empty load: Ambient temperature of 20°C, ambient humidity of 50%RH.
- Temperature and humidity fluctuation exceeding the scope noted in the table is normal under defrosting condition.
- The change of product appearance and parameter will not be notified additionally. Product appearance may deviate due to shooting and printing reasons.

Features: Adjustable stainless steel shelves • Optional 100mm chart recorder • Over / under temp. protection devices • Automatic water level control • Volumes from 36 litre up to 800 litres • Viewing window with interior light • Stainless steel access ports with plug, for convenient access to test items • Swivel casters for mobility • Easily accessible service areas • Stainless steel internal chamber • Solid state heating & humidity switching • Stainless steel humidity generator with viewing window • Low water level humidity heater protection • Wet Dry bulb humidity sensor • Refrigeration system: high efficiency, maximum • reliability & low vibration & low noise. The air cooled refrigeration is working with CFC free refrigerant. The total cooling circuits is working with solenoid valve bypass technique ensuring that the compressor will only be disconnected if cooling capacity has not been required for a prolonged period • Heating system: low mass electric resistance heater is located directly in front of the recirculating air blower. The PID microprocessor controllers with the solid state relays allows extremely precise and constant control.

Temp.&Humidity Environmental Chamber

Temperature and Temperature/Humidity test chambers provide superior performance over a wide range of applications. From prototyping to durability to product component screening tests, the chambers has been designed to meet quality standards while still offering flexibility uniformity and control accuracy for cost-effective testing.Available in a multitude of chamber sizes, MRC is sure to have the exact chamber that best meets your environmental test criteria. For testing smaller products or for customers with limited space, MRC offers chambers starting at 36liter capacity up to 800 liters. MRC Test Chambers are able to perform both high and low temperature tests. Many of these chambers have a temperature range of -70°C to +150°C. Hermetically sealed compressors provide moderate temp. change rates while allowing the chamber to consume less power than comparable chambers. Temp./ Humidity models are equipped with a reliable, accurate and efficient full range humidity system capable of simulating conditions from 20 to 98% RH.

Humidity Controlable Range (at room temp. 20°C)



Temp. & Humid. Range Table

Model Programer		HP-30	HP-40	HP-50	HP-60	HP-80	FP-40	FP-50	FP-60	FP-80	LP-40	LP-50	LP-60	LP-80	TP-50	TP-60	TP-80
Model Controller		HG-30	HG-40	HG-50	HG-60	HG-80	FG-40	FG-50	FG-60	FG-80	LG-40	LG-50	LG-60	LG-80	TG-50	TG-60	TG-80
Internal Dimensions (mm)	W	300	400	500	700	1000	400	500	700	1000	400	500	700	1000	500	700	1000
	H	400	500	600	850	1000	500	600	850	1000	500	600	850	1000	600	850	1000
	D	300	400	500	700	800	400	500	700	800	400	500	700	800	500	700	800
External Dimensions (mm)	W	720	930	1030	1230	1530	930	1030	1230	1530	930	1030	1230	1530	1030	1230	1530
	H	1060	1310	1410	1660	1810	1310	1410	1660	1810	1310	1410	1660	1810	1410	1660	1810
	D	620	810	910	1210	1310	810	910	1210	1310	810	910	1210	1310	910	1210	1310
Volume (liters)		36	80	150	416	800	80	150	416	800	80	150	416	800	150	416	800
Temperature Range		0°C~100°C(150°)					-20°C~100°C(150°)				-40°C~100°C(150°)				-70°C~100°C(150°)		
Humidity & Temp. Uniformity		±0.5°C ±3%RH				±1°C ±5%	±0.5°C ±3%RH			±1°C ±5%	±0.5°C ±3%RH			±1°C ±5%	±0.5°C ±3%RH		±1°C ±5%
Temp. Rising Speed		0°C~100°C about 20min					-20°C~100°C about 35min				-40°C~100°C about 40min				-70°C~100°C about 60min		
Cooling Speed		20°C~0°C about 20min					20°C~-20°C about 45min				20°C~-40°C about 60min				20°C~-70°C about 90min		
Freezing System		Simoleon type full airtight air-cooled refrigeration system									Binary full airtight air-cooled refrigeration system						
Humidity Range		20%~98%RH							Temp. &humid. stability		±0.2% ±2%RH						
Temp. & Humidity Adjustment		Balancing temperature & humidity adjustment method							External material		SUS304#Stainless steel						
Internal Material		SUS304#Stainless steel							Humidification		Surface Steam type, stainless heating humidifier, with humid. water shortage power interruption & thermal protection						
Temp. Preservation		Material rock wool hard PU polyurethane foams							Temp. preservation heating system		Stainless steel heating type humidifiner						
Circulation System		Fan forced recycling convection							Xeransis system		refrigeration invisible heat xeransis method						
Water Supply System		Front-positioned water tank, fully automatic water supply control, recycling filter re-utilization with water shortage alarm device															
Safety Device		Power leakage & overload protective device, compressor overload protective device, over-temperature & over-humidity circuit breaker protection, water shortage protection, humidifier over-heating protection, temperature limit protective device.															
Standard Accessory		2xStainless steel adjustable board sets, vacuum glass perspective window, testing aperture, operating room light,motion wheel, control indicator															
Optional Accessory		Recorder								Power	AC220V, 1PH, 50/60Hz						

High/Low Constant Temperature Chamber

Viewing window with interior light • Stainless steel access ports with plug, for convenient access to test items • Swivel casters for mobility • Easily accessible service areas • Stainless steel internal chamber • Solid state heating switching • Refrigeration system: high efficiency , maximum reliability & low vibration and low noise. The air cooled refrigeration is working with CFC free refrigerant. The total cooling circuits is working with solenoid valve bypass technique ensuring that the compressor will only be disconnected if cooling capacity has not been required for a prolonged period • Heating system: low mass electric resistance heater is located directly in front of the recirculating air blower. The PID microprocessor controllers with the solid state relays allows extremely precise and constant control • Adjustable stainless steel shelves • Optional 100mm chart recorder • Over / under temp. protection devices • Volumes from 36 litre up to 800 litres.

TC-80

80 liter 270 liter

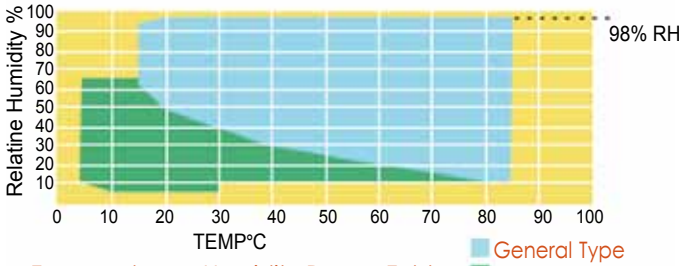
Model		HC-30	HC-40	HC-50	HC-60	HC-80	FC-40	FC-50	FC-60	FC-80	LC-40	LC-50	LC-60	LC-80	TC-50	TC-60	TC-80
Internal Dimensions (mm)	W	300	400	500	700	1000	400	500	700	1000	400	500	700	1000	500	700	1000
	H	400	500	600	850	1000	500	600	850	1000	500	600	850	1000	600	850	1000
	D	300	400	500	700	800	400	500	700	800	400	500	700	800	500	700	800
External Dimensions (mm)	W	720	930	1030	1230	1530	930	1030	1230	1530	930	1030	1230	1530	1030	1230	1530
	H	1060	1310	1410	1660	1810	1310	1410	1660	1810	1310	1410	1660	1810	1410	1660	1810
	D	620	810	910	1210	1310	810	910	1210	1310	810	910	1210	1310	910	1210	1310
Volume (liters)		36	80	150	416	800	80	150	416	800	80	150	416	800	150	416	800
Temperature Range		0°C~100°C(150°)					-20°C~100°C(150°)				-40°C~100°C(150°)				-70°C~100°C(150°)		
Temperature Uniformity		±0.5°C				±1°C	±0.5°C			±1°C	±0.5°C			±1°C	±0.5°C		±1°C
Temp. Rising Speed		0°C~100°C about 20min					-20°C~100°C about 35min				-40°C~100°C about 40min				-70°C~100°C about 60min		
Cooling Speed		20°C~100°C about 20min					20°C~-20°C about 45min				20°C~-40°C about 60min				20°C~-70°C about 90min		
Temperature Stability		±0.2°C															
Freezing System		Simoleon type full airtight air-cooled refrigeration system									Binary full airtight air-cooled refrigeration system						
Internal Material		SUS304#Stainless steel															
External Material		SUS304#Stainless steel															
Temp. Preservation		Material rock wool hard PU polyurethane foams															
Circulation System		Fan forced recycling convection															
Temp. Preservation Heating System		Stainless steel heating type humidifiner															
Safety Device		Power leakage & overload protective device, compressor overload protective device, over-temp. & over-humidity circuit breaker protection, water shortage protection, humidifier over-heating protection, temperature limit protective device.															
Standard Accessory		2 x Stainless steel adjustable shelves, vacuum glass perspective window, testing aperture, operating room light, motion wheel, control indicator															
Optional Accessory		Recorder															
Power		AC220V, 1PH, 50/60Hz															

H243-LPVST

H243-LPVST, The Walk-In Environmental Test Room

The walk-in environmental test room is composed of the thermal wallboard by means of pu foaming. It is easy to disassemble & transport. According to the environmental conditions that customers required, the test machine may be used as the burning room, thermostat room and thermostat-humidistat room if it is equipped with the accurate control system of microcomputer for test room have two kinds to be selected: one is the stainless steel and the other one is the sheet baked by paintings.

Humidity Controlable Range (at room temp. 20°C)



Temperature & Humidity Range Table

Model description: H243-LPVST			
H	**Width** A=900mm B=1800mm C=2700mm D=3600mm E=4500mm F=5400mm G=6300mm H=7200mm I=8100mm		
24	**Height** 21=2100mm 24=2400mm 27=2700mm 36=3600mm		
3	**Deep** 1=1800mm 2=2700mm 3=3600mm 4=4500mm 5=5400mm 6=6300mm 7=7200mm 8=8100mm		
L	**Temp. Range** B=rm.temp. +5°C~70°C H=0°C~70°C F=20°C~70°C G=30°C~70°C L=40°C~70°C T60°C~70°C		
P	G=set value of thermostat and humidistat, P=programmable thermostat and humidistat, C=thermostat room		
V	O=thermostat&humidistat control by set value, T=T-type programmable thermostat and humidistat control, E=E-type Programmable thermostat and humidistat control humidistat room, M=M-type programmable thermostat and humidistat control, N=thermostat control by set value, V=V-type programmable control, P=P-type programmable control, H=H-type programmable control		
S	**Outside material**, S=stainless steel, T=sheet coated with resin		
T	**Inside material**, S=stainless steel, T=sheet coated with resin		
Construction	Thermostat and humidity	Thermostat room	Heat engine room
Temperature Range	H=0°C~70°C L=40°C~70°C F=20°C~70°C T=60°C~70°C G=30°C~70°C	B=Rn.Temp. +5°C~70°C	
Control accuracy	±0.3°C ±3%RH	±0.3°C	
Accuracy of distribution	±1°C ±5%RH	±1°C	
Circulatory system	Convection by fan forced circulation	Convection by fan forced circulation with an additional hot air exhausting unit	
Humidifying system	Vaporized from surface		
Heating system	Heat dissipated by stainless steel		
Dehumidifying system	Desiccated by frozen latent heat		
Freezing system	Heat desiccated by way of air or water cooling with high effective freezing unit		
Power source	AC220V/AC380V, 50/60Hz		
Safety device	Leakage and overload protection device, compressor overload protection device, power-off device for over-temperature and over humidity, water insufficient protection device, over-temperature protection, device for humidifier and the protection device for limit of temperature		

GCC30

Options:

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation)
- 300°C optional maximum temperature
- Optional liquid nitrogen injection system to reach -150°C (including 2m insulated stainless steel pipe & pressure relief valves)
- Access ports for cables & pipes
- Programmable controls with additional segments & multi-program capability
- Interior light (subject to temperature limitations) or through window illumination kit
- Additional shelves as required
- A wide range of sample loading & handling accessories can also be supplied
- Paperless DAQ (Data Acquisition) graphical recorders available.

GCC-Series, Gas Cooled Chambers

Direct injection liquefied gas cooling using liquid CO_2 to achieve -60°C (or optionally using liquid nitrogen to achieve -150°C) & rapid heating to 200°C as standard (or optionally 300°C) all under the control of a sophisticated 8 segment pair controller. Enables the most rigorous temperature test profiles to be used for accelerated age testing or environmental simulation.

Thermal Range: The working temperature range of the chamber is -75°C to +400°C.

Thermal Performance: The equipment has sufficient power to enable a heating rate of up to 10°C/minute with a small thermal load. Temperature stability under steady state conditions is better than ±0.5°C.
Temperature uniformity throughout the empty chamber measured not less than 75mm from any surface is better than ±0.5°C.

Internal Chamber Construction: The internal chamber is fabricated from 304 grade polished stainless steel. All the joints are externally sealed to prevent moisture entering the insulation when the chamber is used at temperatures below ambient.

External Construction: The main case of the chamber is fabricated from mild steel rectangular hollow section panelled with zinc coated mild steel sheet. All external surfaces are finished with grey powder paint.

Thermal Insulation: The inner chamber is insulated with high quality ceramic fibre and mineral wool blanket of adequate thickness to ensure a safe outer case temp.

Chamber Door: The chamber is fitted with a single door that is hinged on the left hand side and opens to give full access to the chamber. The door is fabricated from zinc coated mild steel sheet for the exterior and 304 grade stainless steel for the interior. The door is fitted with silicone rubber door seals to reduce heat leakage through the joints.

Access Ports: A nominal 50mm diameter cable port is located centrally on the left hand side of the inner chamber wall.

Air Circulation: Forced air circulation is provided by a rear mounted fan. The fan is mounted behind an air guide to prevent it being touched by the operator.

Shelves and Runners: The chamber is supplied with three pairs of fixed shelf runners. Two perforated stainless steel shelves are supplied.

Temperature Control: The temperature of the chamber is controlled by a Eurotherm 3216 digital indicating microprocessor based three term time/temperature program controller. The controller is fully adjustable and may be "tuned" by the customer to suit the temperature and load in the chamber.

Under/Over Temperature Control: A Eurotherm 2132 controller is fitted as a low and high temperature cut out. If a fault causes the main set point temperature to be exceeded then a safety contactor will isolate the heating elements and solenoid valves. The over temperature circuit must be manually reset when the chamber has warmed up or cooled down and the fault has been cleared.

Heating System: The chamber is heated by mineral insulated metal sheathed elements. The low surface watt loading of the elements ensures a long and reliable service life.

Cooling System: The chamber is cooled by liquid Nitrogen. A cool channel circuit in the controller switches a solenoid valve to control the direct injection of liquid into the chamber. A second solenoid valve in the supply line is controlled by the under temperature controller and will switch off the liquid Nitrogen if the direct injection valve fails in an open condition. Appropriate pressure relief valves are included to ensure a safe working system. A two metre length of insulated flexible stainless steel hose is supplied for connection of the equipment to the customers bulk supply.

Build Standards: The oven is designed and built to good engineering practice in a facility having a certificated quality assurance scheme to ISO 9001:2008. It complies fully with the relevant UK and European Union Health and Safety at Work legislation. It is compliant with the EU Low Voltage and EMC directives and carries the CE mark.

Model	Temp. range (°C)	Heat-up time to Max. (mins)	Temp. stability °C PID	Temp. uniformity 300°C (±°C)	Cool-down time to -60°C (mins)	Dimensions		Shelves Fitted/ accepted	Shelf loading Each/ total (kg)	Max. Power 200°C	Power Supply
						Internal HxWxD(mm)	External HxWxD(mm)				
GCC30	-60 to 200	26	±0.5	±5.0	12	310x300x300	570x765x770	2/3	10 20	750	single phase
GCC60	-60 to 200	26	±0.5	±5.0	12	410x400x380	670x865x870	2/5	10 30	1000	
GCC120	-60 to 200	26	±0.5	±5.0	12	660x500x380	920x965x870	2/9	10 40	1500	

Uniformity values are measured with vents closed in a steady state chamber after a stabilisation period. Shelf loadings are based on evenly distributed weight. Gas cylinders & Dewars are not included as part of the standard offer.