

# 13. CLIMATE CHAMBER

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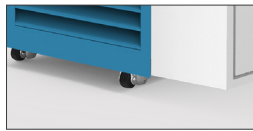
# Climate Chamber\_Temp Control Model -Feature

A Climate Chamber (Temp Control Model) is used for testing material behaviors under constant temperature conditions. This unit has a powerful cooling system, interface functions. It also contains a non-dew observation window and an economic heating up function.

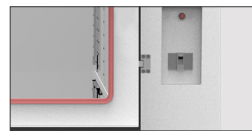
## Feature



View window with LED Lamp



Leveling caster

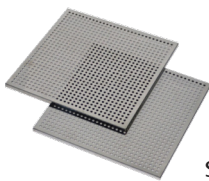


Door sealing gasket

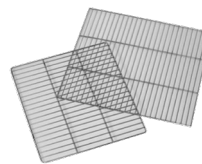


Port hole for data cable

## Shelves' detail



Stainless steel 12mm punched shelves



Stainless steel wire shelves

Catalog No.	Type	DIMENSION(WxDxH)	Weight	Material	Applicable Model
CHWS150	WIRE PLATE	470x475x8	1 Kg	Stainless Steel	SH-CH-150 Series
CHPS150	PUNCH PLATE	470x475x17	1.9 Kg		
CHWS288	WIRE PLATE	570x575x8	1.4 Kg		SH-CH-288 Series
CHPS288	PUNCH PLATE	570x575x17	2.8 Kg		
CHPS408	PUNCH PLATE	820x575x17	5 Kg		SH-CH-408 Series
CHPS800	PUNCH PLATE	970x775x17	8 Kg		SH-CH-800 Series
CHPS1200	PUNCH PLATE	1170x975x17	12 Kg		SH-CH-1200 Series

## -25°C ~ 120°C Temp Control Model Climate Chamber



Model	SH-CH-150U1	SH-CH-288U1	SH-CH-408U1
Temp Range	Amient -45°C ~ 120°C(Ambient -55°F~248°F) (Low limit -25°C)		
Dimension Internal (W×D×H )	500x500x600mm	600x600x800mm	850x600x800mm
	19.69x19.69x23.62"	23.62x23.62x31.50"	33.46x23.62x31.50"
Dimension External (W×D×H )	920x995x1555mm	1020x1095x1755mm	1270x1095x1805mm
	36.22x39.17x61.22"	40.15x43.11x69.09"	50.00x43.11x71.06"
Weight	250 Kg	330 Kg	410 Kg
Capa	150 L	288 L	408 L
Heater Capa	2 KW	3 KW	4 KW
Temp Accuracy & Stability	±0.1°C		
Temp Uniformity	±0.5°C		
Cool Down Time	23°C ~ -20°C (73.4°F~-4°F) About 40min		
Heating Up Time	-20°C ~ 100°C (-4°F~212°F) About 40min		
Temp Controller	Microprocessor Programmable Controller Touch Screen Type		
Material Internal	Stainless Steel		
Material External	Steel Plate with Powder Heating Coated		
Shelves	2 Supplied (17 Maximum)	2 Supplied (24 Maximum)	2 Supplied (24 Maximum)
Electrical Requirements 230V ,50/60Hz, 1Φ	14.5 A	20.5 A	27.0 A
Cat. No. 50Hz(60Hz)	CH150U1230-50 (CH150U1230-60)	CH288U1230-50 (CH288U1230-60)	CH408U1230-50 (CH408U1230-60)
Electrical Requirements 230V,50/60Hz, 3Φ	N/A		16 A
Cat. No. 50Hz(60Hz)			CH408U1230-50-3 (CH408U1230-60-3)

### . Accessory

- Movable stainless wire shelves 2EA

### . Option

- Digital recorder
- 2CH Hybrid recorder
- Max temperature 150°C

### . Safety Device

- Automatic reset function incoming power cut
- Over temp protection
- Electric leakage breaker
- Door open lamp display
- Fan motor over load protection
- Refrigerator over load protection

# -25°C ~ 120°C Temp Control Model Climate Chamber



Model	SH-CH-800U1	SH-CH-1200U1
Temp Range	Ambient -45°C ~ 120°C (Ambient -55°F ~ 248°F) (Low limit -25°C)	
Dimension Internal (WxDxH)	1000x800x1000mm	1200x1000x1000mm
	39.37x31.50x39.37"	47.24x39.37x39.37"
Dimension External (WxDxH)	1590x1325x2100mm	1790x1525x2100mm
	62.60x52.16x82.67"	70.47x60.03x82.67"
Weight	520 Kg	720 Kg
Capa	800 L	1200 L
Heater Capa	5 KW	7 KW
Temp Accuracy & Stability	±0.1°C	
Temp Uniformity	±0.5°C	
Cool Down Time	23°C ~ -20°C (73.4°F ~ -4°F) About 40min	
Heating Up Time	-20°C ~ 100°C (-4°F ~ 212°F) About 40min	
Temp Controller	Microprocessor Programmable Controller Touch Screen Type	
Material Internal	Stainless Steel	
Material External	Steel Plate with Powder Heating Coated	
Shelves	2 Supplied (31 Maximum)	
Electrical Requirements 230V, 50/60Hz, 3Φ	23.5 A	29.2 A
Cat. No. 50Hz(60Hz)	CH800U1230-50-3 (CH800U1230-60-3)	CH1200U1230-50-3 (CH1200U1230-60-3)
Electrical Requirements 380V, 50/60Hz, 3Φ	14.0 A	17.4 A
Cat. No. 50Hz(60Hz)	CH-800U1380-50-3 (CH-800U1380-60-3)	CH-1200U1380-50-3 (CH-1200U1380-60-3)

#### • Accessory

-Movable stainless wire shelves 2EA

#### • Option

-Digital recorder  
-2CH Hybrid recorder  
-Max temperature 150°C

#### • Safety Device

-Automatic reset function incoming power cut  
-Over temp protection  
-Electric leakage breaker  
-Door open lamp display  
-Fan motor over load protection  
-Refrigerator over load protection

## -50°C ~ 120°C Temp Control Model Climate Chamber



Model	SH-CH-150U2	SH-CH-288U2	SH-CH-408U2
Temp Range	Ambient -70°C ~ 120°C(Ambient -10°F~248°F) (Low limit -50°C)		
Dimension Internal (W×D×H )	500x500x600mm	600x600x800mm	850x600x800mm
	19.69x19.69x23.62"	23.62x23.62x31.50"	33.46x23.62x31.50"
Dimension External (W×D×H )	920x995x1555mm	1020x1095x1755mm	1270x1095x1845mm
	36.22x39.17x61.22"	40.15x43.11x69.09"	50.00x43.11x72.64"
Weight	265 Kg	350 Kg	430 Kg
Capa	150 L	288 L	408 L
Heater Capa	3 KW	4 KW	5 KW
Temp Accuracy & Stability	±0.1°C		
Temp Uniformity	±0.5°C		
Cool Down Time	23°C ~ -40°C (73.4°F~-40°F) About 40min		
Heating Up Time	-40°C ~ 100°C (-40°F~212°F) About 40min		
Temp Controller	Microprocessor Programmable Controller Touch Screen Type		
Material Internal	Stainless Steel		
Material External	Steel Plate with Powder Heating Coated		
Shelves	2 Supplied (17 Maximum)	2 Supplied (24 Maximum)	2 Supplied (24 Maximum)
Electrical Requirements 230V, 50/60Hz, 1Φ	21.0 A	23.2 A	36.0 A
Cat. No. 50Hz(60Hz)	CH150U2230-50 (CH150U2230-60)	CH288U2230-50 (CH288U2230-60)	CH408U2230-50 (CH408U2230-60)
Electrical Requirements 230V, 50/60Hz, 3Φ	N/A		21.0 A
Cat. No. 50Hz(60Hz)			CH408U2230-50-3 (CH408U2230-60-3)

### • Accessory

-Movable stainless wire shelves 2EA

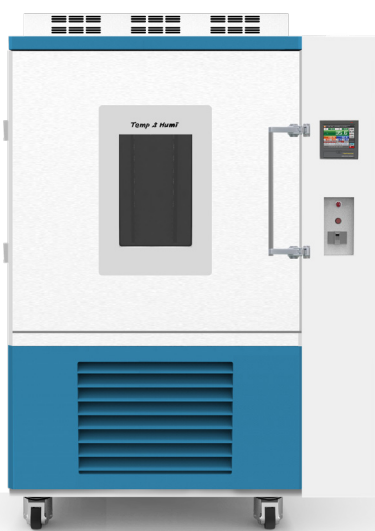
### • Option

-Digital recorder  
-2CH Hybrid recorder  
-Max temperature 150°C

### • Safety Device

-Automatic reset function incoming power cut  
-Over temp protection  
-Electric leakage breaker  
-Door open lamp display  
-Fan motor over load protection  
-Refrigerator over load protection

# -50°C ~ 120°C Temp Control Model Climate Chamber



Model	SH-CH-800U2	SH-CH-1200U2
Temp Range	Ambient -70°C ~ 120°C (Ambient -10°F ~ 248°F) (Low limit -50°C)	
Dimension Internal (WxDxH)	1000x800x1000mm	1200x1000x1000mm
	39.37x31.50x39.37"	47.24x39.37x39.37"
Dimension External (WxDxH)	1590x1325x2100mm	1790x1525x2100mm
	62.60x52.16x82.67"	70.47x60.03x82.67"
Weight	540 Kg	760 Kg
Capa	800 L	1200 L
Heater Capa	8 KW	
Temp Accuracy & Stability	±0.1°C	
Temp Uniformity	±0.5°C	
Cool Down Time	23°C ~ -40°C (73.4°F ~ -40°F) About 40min	
Heating Up Time	-40°C ~ 100°C (-40°F ~ 212°F) About 40min	
Temp Controller	Microprocessor Programmable Controller Touch Screen Type	
Material Internal	Stainless Steel	
Material External	Steel Plate with Powder Heating Coated	
Shelves	2 Supplied (31 Maximum)	
Electrical Requirements 230V, 50/60Hz, 3Φ	33 A	
Cat. No. 50Hz(60Hz)	CH800U2230-50-3 (CH800U2230-60-3)	CH1200U2230-50-3 (CH1200U2230-60-3)
Electrical Requirements 380V, 50/60Hz, 3Φ	19.1 A	
Cat. No. 50Hz(60Hz)	CH-800U2380-50-3 (CH-800U2380-60-3)	CH-1200U2380-50-3 (CH-1200U2380-60-3)

**. Accessory**

- Movable stainless wire shelves 2EA

**. Option**

- Digital recorder
- 2CH Hybrid recorder
- Max temperature 150°C

**. Safety Device**

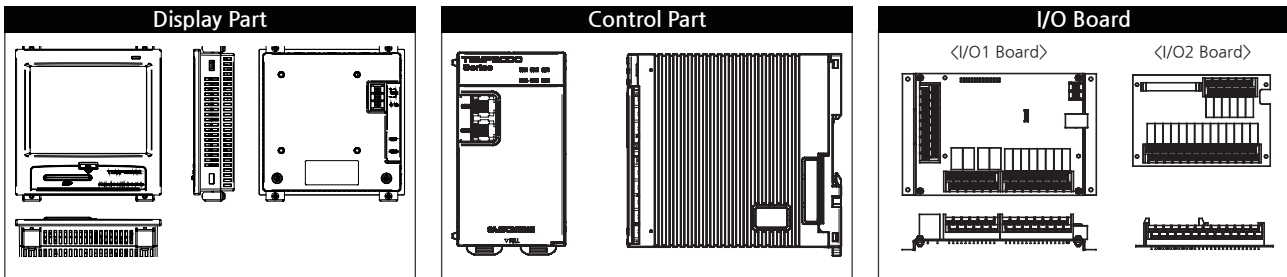
- Automatic reset function incoming power cut
- Over temp protection
- Electric leakage breaker
- Door open lamp display
- Fan motor over load protection
- Refrigerator over load protection

## Programmable Controller Controller



- Detachable display and control unit
- Heat and Cool Control Support
- Picture-like quality of the touch interface
- 18bit A / D converter through a high precision control
- 80 patterns, the 1200 segment operating various programs
- DI 16 points, DO 12 + 20(option) points built in
- Synchronous / asynchronous operation mode
- SYNC master controller
- Digital recorder function
- Users screen configuration support
- SD memory card support
- PC software included for free of change
- VESA Mounting Support
- Korean, English, Chinese, Japanese, Russian supported

### TEMP2500 Drawing



Group		Specification	
Display	Display	5.7" TFT-LCD	
	Screen Resolution	640(W) x 480(H)	
	Language	KOR/ENG/JPN, KOR/ENG/CHN, KOR/ENG/RUS	
	Font	3 Font (HEAD/NORM/ART)	
	Start Page	Support user's start page	
	User Screen	16 customized user screen for screen saver	
	Mount Method	Panel mount, VESA mount(MIS-D 75)	
Control Mode		TEMP 1CH : Heat and Cool Support	
Max Channel		1 Channel	
Pattern & Segments		80pattern / Max 1200 segments , Max 999hour 59Min 59Sec can be set	
Input	TC	K, J, E, T, R, B, S, L, N, U, W, PL, C,	
	RTD	Pt100(JIS/IEC), JPt100(JIS)	
	Analog Voltage Input	0.4V~2V DC, 1~5V DC, 0~10V, -10~20 mV DC, 1~100 mV DC(4~20 mA, 0~20 mA, External Resistance 250Ω, 500Ω)	
Output	Control Output	1 Channel MV(0~100%)	
	Current Output	4~20mA DC(Load Resistance : Max 600Ω)	
	Voltage Output	24V DC(pulse width : Minimum5ms)	
	Transmission Output	1 Channel (PV, SP, MV)	
Digital Input	Contact Type	RUN/STOP/HOLD/STEP by DI, Pattern Number, Delay time of detecting DI error, Trouble Input by DI, Available to customize DI error	
	Contact capacity	Max 12V DC, 10mA	
Digital Output	Relay	C contact	Normal Open 30V DC 5A, 250V AC 5A Normal Close 30V DC 1, 250V AC 2A
		A contact	Normal Open 30V DC 3A, 250V AC 3A
	Open Collector	ON voltage across contacts at less than 2V, the leakage currentless than 100 μA	
Sampling Time		250ms	
Accuracy		±0.1% of FS ±1 digit	
PID Control	PID group	6 group(Zone PID 6 group or Deviation PID 1 group or Seg PID 6 group)	
	PID type	Zone PID, Dev PID, Seg PID	
Communication	Interface	Flexible to change between RS485/RS232C by Dip switch, Max. 31 nodes.	
	Protocol	PC Link(Checksum), MODBUS(RTU,ASCII), Sync-Master(CH1,CH2 selectable)	
	Speed	Max 115,200 bps, Support Ethernet	
Data Back-Up	Object	SDCard, MMC Card(FAT32 format)	
	Functions	Back-up and restore data of Program Pattern / Parameter Settings, and SP/PV/MV vaule	
Power Supply	Power	24VDC	
	Power Consumption	22VA Max	
Operating environment		-	
Weight		-	

# Digital Recorder Options



- Touch panel 5.7 Inch 640 x 480 TFT-LCD
- Universal input ( Thermocouple, RTD, VDC )
- Trend view mode available
- 80MB internal memory and support SD/SDHC memory card
- RS 485/422 communication ( Modbus, PC-link )

Suffix Code		
Model	Code	Information
GR200		Graphic recorder(applied touch panel function) 145(W) × 145(H) mm
Input channel	2	2 channels
	4	4 channels
	8	8 channels
	12	12 channels

Model	GR200
Number of channels	2, 4, 8, 12 (Refer to the type configuration)
Input type	2 thermoresistors (Pt-100, KPt-100) 12 thermocouples (K, J, E, T, R, B, S, L, N, U, Wre 5-26, PL-II) 4 VDC (-10 - 20 mV, 0 - 100 mV, 1 - 5V, 0 - 30 V)
Sampling period	250 ms
Current to measure the thermoresistor (RTD)	About 0.21 mA
Input resistor	Thermocouple : More than 1 M $\Omega$ , VDC : More than 1 M $\Omega$
Allowable wiring resistor	Thermoresistor : Maximum 100 $\Omega$ /wire (The RTD is up to 10 $\Omega$ /wire for the range of -100.00 - .150.00) Thermocouple : Less than 200 $\Omega$ VDC : Less than 2 k $\Omega$
Impact of the wiring resistor	Thermoresistor : $\pm 0.3$ °C/10 $\Omega$ (The 3 lines have the same wiring resistors)
Allowable input voltage	Thermocouple : Less than $\pm 10$ V DC, VDC : Less than $\pm 33$ V DC
Degree	$\pm 0.15$ % of F.S, $\pm 1$ digit (Except the RJC temperature error) ※ Refer to the input table
The error in the reference junction compensation (RJC)	$\pm 2.0$ °C (0 ~ 50 °C)
Sensor short detection (Burn-out)	UP-Scale for the short



## Hybrid Recorder Options



- 50mm thermal transfer method of paper recorder
- Data logger functions for recording without paper
- Supports RS485 communication and dedicated communication port to set or monitor parameters in real-time by PC/PLC
- Multi-input with high accuracy 0.2% level (RTD, TC, Analog)
- 2-channel simultaneous recording in graphic mode and digital mode
- High visibility and easy setting by LCD dot matrix
- Supports various option I/O functions
- Small size(W96×H96×L100 mm), light weight

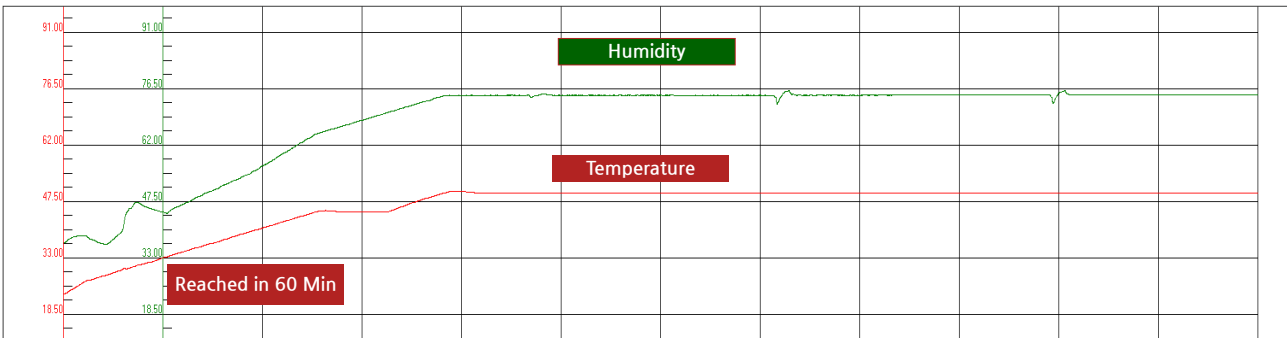
Record accuracy	±0.5%F.S.	
Alarm output	CH1 (AL1, AL2), CH2(AL1, AL2) Relay out put(250 VAC/30 VDC 3 A 1 a)	
Alarm output hysteresis	ON/OFF interval setting for alarm output: 1 to 999digit variable	
Communication output	RS485 communication output(Modbus RTU protocol)	
Set method	Setting by front keys	
Sampling cycle	500 ms/channel x 2 channels = 1000 ms	
Dielectric strength	2300 VAC 50/60 Hz for 1 min.(charging terminal of the other polarity)	
Vibration	0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each of X, Y, Z directions for 1 hour	
Relay life cycle	Mechanical: Over 5,000,000 operations, Electrical: Over 100,000 operations	
Insulation resistance	Over 100 MΩ (at 500 VDC megger)	
Noise resistance	Square shaped noise by noise simulator (pulse width 1 μs)±2 kV	
Print	Method	Direct thermal line print
	Resolution	8 dot/mm
	Dots	384 dot/Line
	Life cycle	50 km
Record	Graphic mode	<ul style="list-style-type: none"> <li>• Record speed(recording paper speed): 10, 30, 60, 120, 240, 480, 940 mm/hour</li> <li>• Memo cycle: 30 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 2 h, 3 h, 4 h, 8 h, 16 h, 24 h</li> </ul>
	Digital mode	TEXT mode record cycle: 00 m 05 s to 99 m 59 s
	Paper	Thermal Direct Receipt Paper (57 mm x 16 m)
	Paper supply method	Clamshell Type
	Language	Korean, English
Environment	Ambient temperature	0 to 50 °C, storage: -20 to 60 °C
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Approval	CE	
Unit weight	Approx. 700 g	

# Climate Chamber\_Temp&Humi Control Model -Feature

Climate Chamber(Temp&Humi Control Model) simulates the effects on a product or material when its subjected to a range of temperature and humidity conditions. This unit has a powerful cooling system and interface functions. It also contains a non-dew observation window and an economic heating up function.

Applications of this equipment range from food science, semiconductors, and to military quality assurance.

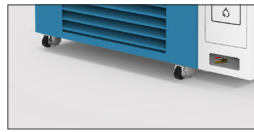
## Uniformity sheet



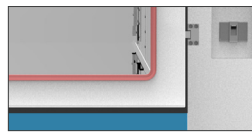
## Feature



View window with LED Lamp



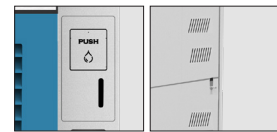
Leveling caster



Door sealing gasket

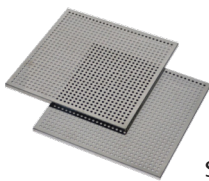


Port hole for data cable

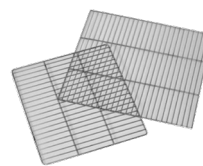


Dual water supply (automatic & manual)

## Shelves' detail



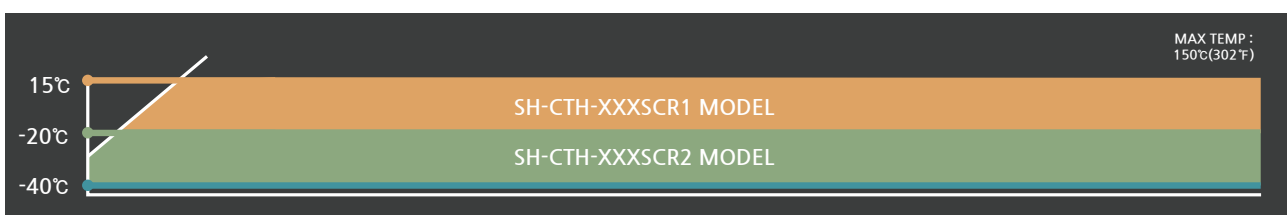
Stainless steel 12mm punched shelves



Stainless steel wire shelves

Catalog No.	Type	Dimension(WxDxH)	Weight	Material	Applicable Model
CHWS150	WIRE PLATE	470x475x8	1 Kg	Stainless Steel	SH-CTH-150 Series
CHPS150	PUNCH PLATE	470x475x17	1.9 Kg		SH-CTH-288 Series
CHWS288	WIRE PLATE	570x575x8	1.4 Kg		SH-CTH-408 Series
CHPS288	PUNCH PLATE	570x575x17	2.8 Kg		SH-CTH-800 Series
CHPS408	PUNCH PLATE	820x575x17	5 Kg		SH-CTH-1200 Series
CHPS800	PUNCH PLATE	970x775x17	8 Kg		
CHPS1200	PUNCH PLATE	1170x975x17	12 Kg		

## Selection guide



Ambient temperature is below 25°C, relative humidity is lower than 80%

-25°C ~ 120°C

Temp&Humi Control Model

## Climate Chamber



Model	SH-CTH-150SCR1	SH-CTH-288SCR1	SH-CTH-408SCR1
Temp Range	Ambient -45°C ~ 120°C(Ambient -55°F~248°F) (Low limit -25°C)		
Humi Range	30% ~ 98% at Temp 20°C ~ 80°C(68°F~176°F) 25% ~ 90% at Temp 80°C ~ 85°C(176°F~185°F) 20% ~ 80% at Temp 85°C ~ 90°C(185°F~194°F)		
Accuracy & Stability Temp	±0.1°C		
Accuracy & Stability Humi	±1.5%		
Temp Uniformity	±0.5°C		
Humi Uniformity	±2%		
Temp & Humi Controller	Touch Screen Temp & Humi Controller		
Sensor Temp	Pt-100Ω		
Sensor Humi	Electronic Sensor		
Dimension Internal (W×D×H)	500x500x600mm	600x600x800mm	850x600x800mm
	19.69x19.69x23.62"	23.62x23.62x31.50"	33.46x23.62x31.50"
Dimension External (W×D×H)	950x995x1595mm	1050x1095x1795mm	1300x1095x1845mm
	37.40x39.17x62.79"	41.22x43.11x70.66"	51.18x43.11x72.63"
Weight	210 Kg	305 Kg	365 Kg
Material Internal	Stainless Steel		
Material External	Steel Plate with Powder Heating Coated		
Shelves	2 Supplied (17 Maximum)	2 Supplied (24 Maximum)	2 Supplied (24 Maximum)
Temp Heater Capa	2.0 KW	2.0 KW	2.5 KW
Humi Heater Capa	2.0 KW	2.5 KW	3.5 KW
Illumination	LED Lamp		
View Windows	Hot wire type glass		
Water Storage tank	Stainless Steel with Powder Heating Coated		
Electrical Requirements 230,50/60Hz, 1Φ	22.5 A	25.6 A	29.6 A
Cat. No. 50Hz (60Hz)	CTH150SCR1230-50 (CTH150SCR1230-60)	CTH288SCR1230-50 (CTH288SCR1230-60)	CTH408SCR1230-50 (CTH408SCR1230-60)
Electrical Requirements 230,50/60Hz, 3Φ	N/A		17.1 A
Cat. No. 50Hz (60Hz)			CTH408SCR1230-50-3 (CTH408SCR1230-60-3)
Electrical Requirements 380v, 50/60Hz, 3Φ			9.1 A
Cat. No. 50Hz (60Hz)			CTH408SCR1380-50-3 (CTH408SCR1380-60-3)

• **Accessory**

-Movable stainless wire shelves 2EA (CTH150~288 Series)

• **Option**

-Digital recorder  
-2CH Hybrid recorder  
-Max temperature 150°C

• **Safety Device**

-Automatic reset function incoming power cut  
-Over temp protection  
-Electric leakage breaker  
-Door open lamp display  
-Fan motor over load protection  
-Refrigerator over load protection

# -25°C ~ 120°C Temp&Humi Control Model Climate Chamber



Model	SH-CTH-800SCR1	SH-CTH-1200SCR1
Temp Range	Ambient -45°C ~ 120°C(Ambient -55°F~248°F) (Low limit -25°C)	
Humi Range	30% ~ 98% at Temp 20°C ~ 80°C(68°F~176°F) 25% ~ 90% at Temp 80°C ~ 85°C(176°F~185°F) 20% ~ 80% at Temp 85°C ~ 90°C(185°F~194°F)	
Accuracy & Stability Temp	±0.1°C	
Accuracy & Stability Humi	±1.5%	
Temp Uniformity	±0.5°C	
Humi Uniformity	±2%	
Temp & Humi Controller	Touch Screen Temp & Humi Controller	
Sensor Temp	Pt-100Ω	
Sensor Humi	Electronic Sensor	
Dimension Internal (W×D×H)	1000x800x1000mm 39.37x31.50x39.37"	1200x1000x1000mm 47.24x39.37x39.37"
Dimension External (W×D×H)	1620x1445x2100mm 63.78x56.89x82.67"	1820x1645x2100mm 71.65x64.76x82.67"
Weight	495 Kg	570 Kg
Material Internal	Stainless Steel	
Material External	Steel Plate with Powder Heating Coated	
Shelves	2 Supplied (31 Maximum)	
Temp Heater Capa	3.0 KW	5.0 KW
Humi Heater Capa	4.0 KW	6.0 KW
Illumination	LED Lamp	
View Windows	Hot wire type glass	
Water Storage tank	Stainless Steel with Powder Heating Coated	
Electrical Requirements 230,50/60Hz, 1Φ	N/A	
Cat. No. 50Hz (60Hz)		
Electrical Requirements 230,50/60Hz, 3Φ	24.4 A	34.9 A
Cat. No. 50Hz (60Hz)	CTH800SCR1230-50-3 (CTH800SCR1230-60-3)	CTH1200SCR1230-50-3 (CTH1200SCR1230-60-3)
Electrical Requirements 380v, 50/60Hz, 3Φ	14.1 A	20.2 A
Cat. No. 50Hz (60Hz)	CTH800SCR1380-50-3 (CTH800SCR1380-60-3)	CTH1200SCR1380-50-3 (CTH1200SCR1380-60-3)

#### . Accessory

-Movable stainless punch plate  
(CTH408~1200 Series)

#### . Option

-Digital recorder  
-2CH Hybrid recorder  
-Max temperature 150°C

#### . Safety Device

-Automatic reset function incoming power cut  
-Over temp protection  
-Electric leakage breaker  
-Door open lamp display  
-Fan motor over load protection  
-Refrigerator over load protection

-50°C ~ 120°C

Temp&Humi Control Model

## Climate Chamber



Model	SH-CTH-150SCR2	SH-CTH-288SCR2	SH-CTH-408SCR2
Temp Range	Ambient -70°C ~ 120°C(Ambient -10°F~248°F) (Low limit -50°C)		
Humi Range	30% ~ 98% at Temp 20°C ~ 80°C(68°F~176°F) 25% ~ 90% at Temp 80°C ~ 85°C(176°F~185°F) 20% ~ 80% at Temp 85°C ~ 90°C(185°F~194°F)		
Accuracy & Stability Temp	±0.1°C		
Accuracy & Stability Humi	±1.5%		
Temp Uniformity	±0.5°C		
Humi Uniformity	±2%		
Temp & Humi Controller	Touch Screen Temp & Humi Controller		
Sensor Temp	Pt-100Ω		
Sensor Humi	Electronic Sensor		
Dimension Internal (W×D×H )	500x500x600mm 19.69x19.69x23.62"	600x600x800mm 23.62x23.62x31.50"	850x600x800mm 33.46x23.62x31.50"
Dimension External (W×D×H )	950x995x1595mm 37.40x39.17x62.79"	1050x1095x1795mm 41.22x43.11x70.66"	1300x1095x1845mm 51.18x43.11x72.63"
Net Weight	268 Kg	360 Kg	420 Kg
Material Internal	Stainless Steel		
Material External	Steel Plate with Powder Heating Coated		
Shelves	2 Supplied (17 Maximum)	2 Supplied (24 Maximum)	2 Supplied (24 Maximum)
Temp Heater Capa	3.0 KW	3.0 KW	3.0 KW
Humi Heater Capa	2.0 KW	2.5 KW	4.0 KW
Illumination	LED Lamp		
View Windows	Hot wire type glass		
Water Storage tank	Stainless Steel with Powder Heating Coated		
Electrical Requirements 230,50/60Hz, 1Φ	33.1 A	35.4 A	43.8 A
Cat. No. 50Hz (60Hz)	CTH150SCR2230-50 (CTH150SCR1230-60)	CTH288SCR2230-50 (CTH288SCR1230-60)	CTH408SCR2230-50 (CTH408SCR2230-60)
Electrical Requirements 230,50/60Hz, 3Φ	N/A		25.3 A
Cat. No. 50Hz (60Hz)			CTH408SCR2230-50-3 (CTH408SCR2230-60-3)
Electrical Requirements 380v, 50/60Hz, 3Φ			14.6 A
Cat. No. 50Hz (60Hz)			CTH408SCR2380-50-3 (CTH408SCR2380-60-3)

**. Accessory**

-Movable stainless wire shelves 2EA  
(CTH150~288 Series)

**. Option**

-Digital recorder  
-2CH Hybrid recorder  
-Max temperature 150°C

**. Safety Device**

-Automatic reset function incoming power cut  
-Over temp protection  
-Electric leakage breaker  
-Door open lamp display  
-Fan motor over load protection  
-Refrigerator over load protection

# -50°C ~ 120°C Temp&Humi Control Model Climate Chamber



Model	SH-CTH-800SCR2	SH-CTH-1200SCR2
Temp Range	Ambient -70°C ~ 120°C(Ambient -10°F~248°F) (Low limit -50°C)	
Humi Range	30% ~ 98% at Temp 20°C ~ 80°C(68°F~176°F) 25% ~ 90% at Temp 80°C ~ 85°C(176°F~185°F) 20% ~ 80% at Temp 85°C ~ 90°C(185°F~194°F)	
Accuracy & Stability Temp	±0.1°C	
Accuracy & Stability Humi	±1.5%	
Temp Uniformity	±0.5°C	
Humi Uniformity	±2%	
Temp & Humi Controller	Touch Screen Temp & Humi Controller	
Sensor Temp	Pt-100Ω	
Sensor Humi	Electronic Sensor	
Dimension Internal (W×D×H )	1000x800x1000mm 39.37x31.50x39.37"	1200x1000x1000mm 47.24x39.37x39.37"
Dimension External (W×D×H )	1620x1445x2100mm 63.78x56.89x82.67"	1820x1645x2100mm 71.65x64.76x82.67"
Net Weight	540 Kg	690 Kg
Material Internal	Stainless Steel	
Material External	Steel Plate with Powder Heating Coated	
Shelves	2 Supplied (31 Maximum)	
Temp Heater Capa	4.0 KW	6.0 KW
Humi Heater Capa	5.0 KW	7.0 KW
Illumination	LED Lamp	
View Windows	Hot wire type glass	
Water Storage tank	Stainless Steel with Powder Heating Coated	
Electrical Requirements 230, 50/60Hz, 3Φ	35.6 A	46.1 A
Cat. No. 50Hz (60Hz)	CTH800SCR2230-50-3 (CTH800SCR2230-60-3)	CTH1200SCR2230-50-3 (CTH1200SCR2230-60-3)
Electrical Requirements 380v, 50/60Hz, 3Φ	20.6 A	26.7 A
Cat. No. 50Hz (60Hz)	CTH800SCR2380-50-3 (CTH800SCR2380-60-3)	CTH1200SCR2380-50-3 (CTH1200SCR2380-60-3)

**. Accessory**

- Movable stainless punch plate (CTH408~1200 Series)

**. Option**

- Digital recorder
- 2CH Hybrid recorder
- Max temperature 150°C

**. Safety Device**

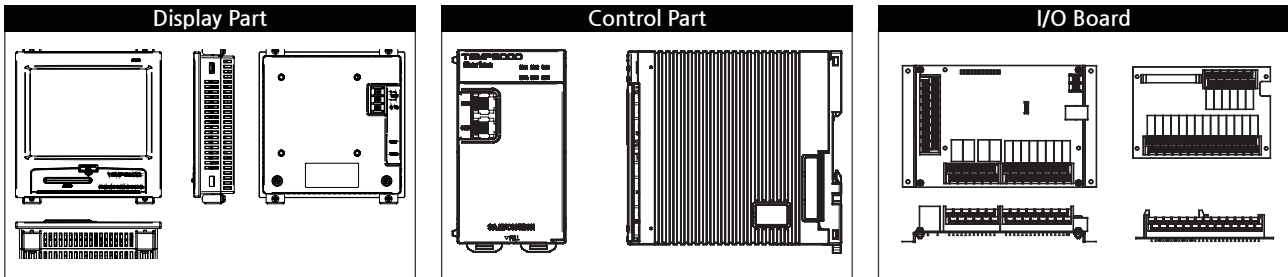
- Automatic reset function incoming power cut
- Over temp protection
- Electric leakage breaker
- Door open lamp display
- Fan motor over load protection
- Refrigerator over load protection

## Programmable Controller Controller



- Detachable display and control unit
- Heat and Cool Control Support
- Picture-like quality of the touch interface
- 18bit A / D converter through a high precision control
- 80 patterns, the 1200 segment operating various programs
- DI 16 points, DO 12 + 20(option) points built in
- Synchronous / asynchronous operation mode
- SYNC master controller
- Digital recorder function
- Users screen configuration support
- SD memory card support
- PC Software included for free of charge
- VESA Mounting Support
- Korean, English, Chinese, Japanese, Russian supported

### TEMI2500 Drawing



Group		Specification	
Display	Display	5.7" TFT-LCD	
	Screen Resolution	640(W) x 480(H)	
	Language	KOR/ENG/JPN, KOR/ENG/CHN, KOR/ENG/RUS	
	Font	3 Font (HEAD/NORM/ART)	
	Start Page	Support user's start page	
	User Screen	16 customized user screen for screen saver	
	Mount Method	Panel mount, VESA mount(MIS-D 75)	
Control Mode		Temp 1CH : Heat and Cool Support Humid 1CH : Humid and DE-Humid Support	
Max Channel		2 Channel	
Pattern & Segments		120 pattern / Max 1200 segments , Max 999hour 59Min 59Sec can be set	
Input	Temp	PT1 100Ω	-90.00 ~ 200.00℃
		PT2 100Ω	-100.0 ~ 300.0℃
	Humid	DC voltage	-1.000 ~ 2.000V
		PT1 100Ω	- 10.0 ~ 110.0℃
	DC voltage	1.000~5.000V	
Output	Control Output	Temp & Humid MV (0 ~ 100%)	
	Current Output	4~20mA DC(Load Resistance : Max 600Ω)	
	Voltage Output	24V DC(pulse width : Minimum5ms)	
	Transmission Output	Select PV, SP, MV of Temp & Humid	
Digital Input	Contact Type	RUN/STOP/HOLD/STEP by DI, Pattern Number, Delay time of detecting DI error, Trouble Input by DI, Available to customize DI error	
	Contact Capacity	Max 12V DC, 10mA	
Digital Output	Relay	C contact	Normal Open 30V DC 5A, 250V AC 5A Normal Close 30V DC 1, 250V AC 2A
		A contact	Normal Open 30V DC 3A, 250V AC 3A
	Open Collector	ON voltage across contacts at less than 2V, the leakage current less than 100 μA	
Sampling Time		250ms	
Accuracy		Temp(±0.1% ±1 digit of Full Scale), Humid(±1% ±1 digit of Full Scale)	
PID Control	PID group	9 group(Temp, Humid PID 6 group + Only Temp PID 3 group)	
	PID type	ZONE PID	
Communication	Interface	Flexible to change between RS485/RS232C by Dip switch, Max. 31 nodes.	
	Protocol	PC Link(Checksum), MODBUS(RTU,ASCII)	
	Speed	Max 115,200 bps, Support Ethernet	
Data Back-Up	Object	SDCard, MMC Card(FAT32 format)	
	Functions	Back-up and restore data of Program Pattern / Parameter Settings, and SP/PV/MV vaule	
Power Supply	Power	24VDC	
	Power Consumption	22VA Max	

# Digital Recorder Options



- Touch panel 5.7 Inch 640 x 480 TFT-LCD
- Universal input ( Thermocouple, RTD, VDC )
- Trend view mode available
- 80MB internal memory and support SD/SDHC memory card
- RS 485/422 communication ( Modbus, PC-link )

Suffix Code		
Model	Code	Information
GR200		Graphic recorder(applied touch panel function) 145(W) × 145(H) mm
Input channel	2	2 channels
	4	4 channels
	8	8 channels
	12	12 channels

Model	GR200
Number of channels	2, 4, 8, 12 (Refer to the type configuration)
Input type	2 thermoresistors (Pt-100, KPt-100) 12 thermocouples (K, J, E, T, R, B, S, L, N, U, Wre 5-26, PL-II) 4 VDC (-10 - 20 mV, 0 - 100 mV, 1 - 5V, 0 - 30 V)
Sampling period	250 ms
Current to measure the thermoresistor (RTD)	About 0.21 mA
Input resistor	Thermocouple : More than 1 M $\Omega$ , VDC : More than 1 M $\Omega$
Allowable wiring resistor	Thermoresistor : Maximum 100 $\Omega$ /wire (The RTD is up to 10 $\Omega$ /wire for the range of -100.00 - .150.00) Thermocouple : Less than 200 $\Omega$ VDC : Less than 2 k $\Omega$
Impact of the wiring resistor	Thermoresistor : $\pm 0.3$ °C/10 $\Omega$ (The 3 lines have the same wiring resistors)
Allowable input voltage	Thermocouple : Less than $\pm 10$ V DC, VDC : Less than $\pm 33$ V DC
Degree	$\pm 0.15$ % of F.S, $\pm 1$ digit (Except the RJC temperature error) ※ Refer to the input table
The error in the reference junction compensation (RJC)	$\pm 2.0$ °C (0 ~ 50 °C)
Sensor short detection (Burn-out)	UP-Scale for the short



## Hybrid Recorder Options



- 50mm thermal transfer method of paper recorder
- Data logger functions for recording without paper
- Supports RS485 communication and dedicated communication port to set or monitor parameters in real-time by PC/PLC
- Multi-input with high accuracy 0.2% level (RTD, TC, Analog)
- 2-channel simultaneous recording in graphic mode and digital mode
- High visibility and easy setting by LCD dot matrix
- Supports various option I/O functions
- Small size(W96×H96×L100 mm), light weight

Record accuracy		±0.5%F.S.
Alarm output		CH1 (AL1, AL2), CH2(AL1, AL2) Relay out put(250 VAC/30 VDC 3 A 1 a)
Alarm output hysteresis		ON/OFF interval setting for alarm output: 1 to 999digit variable
Communication output		RS485 communication output(Modbus RTU protocol)
Set method		Setting by front keys
Sampling cycle		500 ms/channel x 2 channels = 1000 ms
Dielectric strength		2300 VAC 50/60 Hz for 1 min.(charging terminal of the other polarity)
Vibration		0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each of X, Y, Z directions for 1 hour
Relay life cycle		Mechanical: Over 5,000,000 operations, Electrical: Over 100,000 operations
Insulation resistance		Over 100 MΩ (at 500 VDC megger)
Noise resistance		Square shaped noise by noise simulator (pulse width 1 μs)±2 kV
Print	Method	Direct thermal line print
	Resolution	8 dot/mm
	Dots	384 dot/Line
	Life cycle	50 km
Record	Graphic mode	<ul style="list-style-type: none"> <li>• Record speed(recording paper speed): 10, 30, 60, 120, 240, 480, 940 mm/hour</li> <li>• Memo cycle: 30 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 2 h, 3 h, 4 h, 8 h, 16 h, 24 h</li> </ul>
	Digital mode	TEXT mode record cycle: 00 m 05 s to 99 m 59 s
	Paper	Thermal Direct Receipt Paper (57 mm x 16 m)
	Paper supply method	Clamshell Type
	Language	Korean, English
Environment	Ambient temperature	0 to 50 °C, storage: -20 to 60 °C
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Approval		CE
Unit weight		Approx. 700 g