

# Temperature and Humidity Test Chamber



(with Rapid Temperature Change)

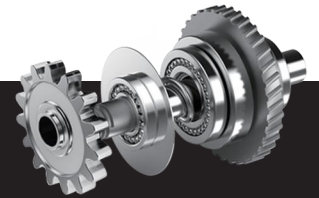


V3.240819

# Temperature and Humidity Test Chamber

## (with Rapid Temperature Change)

Discover LAB1ST's cutting-edge temperature and humidity test chambers, meticulously engineered to excel in diverse industrial applications. Available in chamber volumes ranging from 50 L to 1000 L, these chambers offer extensive testing capacities. They boast an impressive temperature range from -40 °C to 150 °C or -70 °C to 150 °C, accommodating a wide spectrum of testing needs. Featuring rapid temperature change functions (TCH\*V-R\* series) with heating rates of 5 °C/min, 10 °C/min, or 15 °C/min, LAB1ST's chambers ensure swift transitions for efficient testing processes. Built with precision and durability in mind, these chambers are equipped to maintain optimal testing conditions with unparalleled reliability, supporting critical research, development, and quality assurance endeavors across industries.



### Key Benefits

- **Stable operation & quality assurance** based on smart PLC control system, ensures reliable and consistent performance.
- **Wide temperature range** down to -70 °C and up to 150 °C, suitable for diverse environmental testing conditions.
- **Powerful customization capabilities** ensure adaptability for various temperature, humidity, size, cycling rate, structure requirements.
- **Standardized modular machine** ensures flexible configuration options while ensuring fast lead time.

### Application



#### Electronics

Testing electronic components and devices for reliability and performance under different climate conditions.



#### Automotive

Assessing the durability of automotive parts and systems to ensure they can withstand varying environmental conditions.



#### Pharmaceuticals

Testing drug stability and packaging under controlled humidity and temperature conditions.



#### Materials Science

Studying how different materials degrade or behave in response to environmental changes.

# Flexible Chambers with Extended Testing Ranges

LAB1ST's temperature and humidity test chambers offers two temp. ranges and a variety of testing volumes. With many options, they can be configured to accommodate your specific requirements.



## Standard Test Chambers

### TCH\*F Series

-40°C~150°C [-40°F~302°F]

### TCH\*V Series

-70°C~150°C [-94°F~302°F]

As a kind of floor-standing reach-in chambers, TCH\*F and TCH\*V series chambers offer a wide temp. range from -40°C to 150°C or -70°C~150°C, and humidity control from 20% to 98% RH.

They are available in sizes ranging from 50L to 1000L, or larger.

## Test Chambers with Rapid Temp. Changes

### TCH\*V-R\* Series

-70°C~150°C [-94°F~302°F]

-40°C~120 °C [-40°F~ 248°F] for rapid temperature change

Known for its industry-leading speed, TCH\*V-R\* series chambers offer rapid heating and cooling rates exceedingly twice those of conventional chambers.

They can cycle temperature at rates up to 5°C/minute, 10°C/minute or 15°C/minute based on specific requirements.

## Features

### High-end configuration, ensuring stability

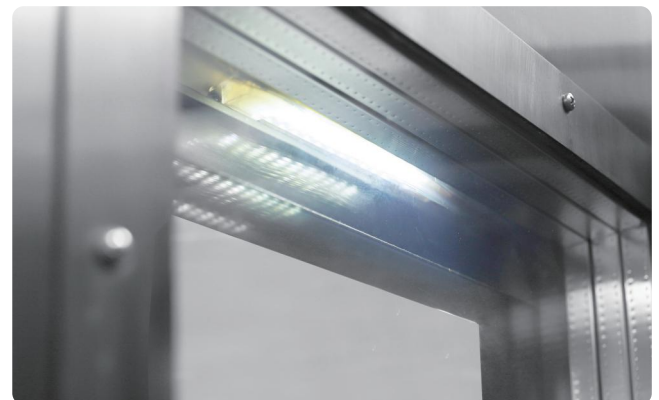
- > Use high-precision electronic humidity sensor, no maintenance, precise control
- > Famous brand compressors (SECOP, Tecumseh, Bitzer, etc.) with long service life and stable performance
- > Standard refrigeration system pressure gauge, convenient for monitoring refrigeration system status
- > Use electronic expansion valves or high-performance capillary tubes to achieve efficient and precise refrigeration control and save energy



2-inch cable port

### High-quality construction

- > Cold-rolled plate sprayed plastic or all stainless steel 304 shell (optional, suitable for harsh environments)
- > Standard large windows (4 layers of glass insulation) with glass heating to effectively prevent glass fogging at low temperatures
- > Stainless steel 304 interior with precisely welded corners
- > Independent air duct circulation system ensures uniform temperature and humidity in the working room



Viewing window with a standard lighting

### Humanized design, increased convenience

- > Viewing window with a standard lighting for easy observation
- > Standard 2-inch cable port for easy power-on testing (position, size and quantity can be customized)
- > Adjustable stainless steel shelves with heavy-duty support rails can be freely disassembled to facilitate cleaning inside the chamber
- > Standard heavy duty casters for easy mobility



### Standard program control, stable and reliable

- > PLC control provides reliability, flexibility, real-time operation, and easy integration
- > 2 working modes: program mode and constant temperature and humidity mode
- > Capacity to add, delete, copy and modify programs
- > Repeat the program or pause it
- > View the historical record curve
- > Selectable restart mode after power failure
- > Controller may choose to delay timer until setpoint is reached
- > Upgraded algorithm makes the control of temperature and humidity more precise

### Easy operation and communication

- > Industrial standard electrical panel, safe, stable and easy to maintain
- > 7-inch touch screen, can be operated even with gloves
- > Standard USB port, convenient for data output and later analysis
- > Standard RS485 communication and Ethernet communication



MENU		NAME:		2024/07/17 12:09:05					
	NO.	TEMP	HUMI	T. /H	T. /M. S	TS1	TS2	TS3	WAIT
PATTERN SET	1	0.0	0.0	0	0.00	0	0	0	0
WAIT SET	2	0.0	0.0	0	0.00	0	0	0	0
REPEAT SET	3	0.0	0.0	0	0.00	0	0	0	0
PATTERN NAME	4	0.0	0.0	0	0.00	0	0	0	0
TIME SIGNAL	PTN NO.	2	INSERT	DELETE	PG. UP	PG. DN			
	PTN VIEW	COPY PTN	DEL. PTN	COPY U	COPY HMI				

### Security and certification

- > Independent temperature limit switch (shuts off the circuit when control fails) and sound and light alarms to remind the operator and ensure safe operation of the test without accidents.
- > Compressor overheat, overcurrent, overload protection, fan overheat protection, water shortage protection.
- > CE certification, optional UL/ETL standard electrical (UL508A)
- > Multiple voltage options (North American or international standards)

## Choose the Right Model for You



Choose from our diverse series including **TCH\*F**, **TCH\*V** and **TCH\*V-R**, each offering specific temperature ranges and chamber sizes tailored to various testing applications. Whether you need a compact reach-in design or a versatile walk-in chamber.

Designed for durability, precision, and ease of use, our temperature and humidity chambers are the trusted choice for industries demanding reliable environmental testing solutions.



Series	TCH*F	TCH*V	TCH*V-R*	TCH-Custom
Model	TCH50F, TCH100F, TCH225F, TCH500F, TCH1000F	TCH50V, TCH100V, TCH225V, TCH500V, TCH1000V	TCH*V-R5, TCH*V-R10, TCH*V-R15	-
Form	Floor-stand reach-in design			Floor-stand or Walk-in
Temperature Range	-40°C to 150°C	-70°C to 150°C	-70°C to 150°C	Flexible temp. range
Rapid Temperature Change Range	-	-	-40°C to 120°C	-
Humidity Control	20% - 98% RH			Flexible range
Standard Chamber	50L, 100L, 225L, 500L, 1000L			Flexible size range
Heating Rate	3.0-5.0 C/min		R5: 5 C/min R10: 10 C/min R15: 15 C/min	Flexible heating speed
Cooling Rate	0.7-1.5 C/min		R5: 5 C/min R10: 10 C/min R15: 15 C/min	Flexible cooling speed

# TCH\*F series

-40°C~150°C [-40°F~302°F]



Temp/Humidity	TCH50F	TCH100F	TCH225F	TCH500F	TCH1000F
Workspace volume	50L [1.8 cu ft]	100L [3.5 cu ft]	225L [7.9 cu ft]	500L [17.8 cu ft]	1000L [35.3 cu ft]
<b>Performance</b>					
Temperature Range	-40°C~150°C [-40°F~302°F], customizable				
Temperature Fluctuation	±0.5 °C				
Temperature Uniformity	±1 °C				
Heating Rate	3.0-5.0 °C/min				
Cooling Rate	0.7-1.5 °C/min				
Humidity Range	20%~98% RH				
Humidity Fluctuation	±3%				
Humidity Uniformity	±2~±3% RH				
<b>General Information</b>					
Chamber Material	SUS304				
Shelf	2 pcs [or more], SUS304 wired plates with support				
Max. Shelf Load	10 kg [22 lbs]				
Cable Port	50 mm [2 inch]				
Control Panel	7 inch industrial color touch screen, temperature and humidity program controller				
Communication	USB, RS485 and Ethernet				
Compressor Brand	Germany Secop, French Tecumseh, Germany Blitzer, etc.				
Cooling Mode	Air-cooled				
Humidifier	Heavy duty stainless steel 304 electrical heating humidifier				
<b>Dimension</b>					
Workspace Dimensions (mm)	350*360*400	500*400*500	600*500*750	800*700*900	1000*1000*1000
[WxDxH] (in)	13.8*14.2*15.7	19.7*15.7*19.7	23.6*19.7*29.5	31.5*27.6*35.4	39.4*39.4*39.4
Exterior Dimensions (mm)	880*870*1520	980*920*1600	1080*1050*1860	1280*1270*2050	1480*1500*2150
[WxDxH] (in)	34.6*34.3*59.8	38.6*36.2*63.0	42.5*41.3*73.2	50.4*50.0*80.7	58.3*59.1*84.6
Installed Power	3.5 kW	3.8 kW	5 kW	7 kW	13 kW
Electrical Supply	North America: 208~240V, 1P, 60Hz or 208~240V, 3P, 60Hz International: 220~240V, 1P, 50Hz or 380~400V, 3P, 50Hz				
<b>Weight</b>					
Gross Weight	260 kg   573 lbs	300 kg   661 lbs	400 kg   882 lbs	500 kg   1102 lbs	780 kg   1719 lbs

## TCH\*V series

-70°C~150°C [-94°F~302°F]



Model	TCH50V	TCH100V	TCH225V	TCH500V	TCH1000V
Workspace volume	50L [1.8 cu ft]	100L [3.5 cu ft]	225L [7.9 cu ft]	500L [17.8 cu ft]	1000L [35.3 cu ft]
<b>Performance</b>					
Temperature Range	-70°C~150°C [-94°F~302°F], customizable				
Temperature Fluctuation	±0.5 °C				
Temperature Uniformity	±1 °C				
Heating Rate	3.0-5.0 °C/min				
Cooling Rate	0.7-1.5 °C/min				
Humidity Range	20%~98% RH				
Humidity Fluctuation	±3%				
Humidity Uniformity	±2~±3% RH				
<b>General Information</b>					
Chamber Material	SUS304				
Shelf	2 pcs [or more], SUS304 wired plates with support				
Max. Shelf Load	10 kg [22 lbs]				
Cable Port	50 mm [2 inch]				
Control Panel	7 inch industrial color touch screen, temperature and humidity program controller				
Communication	USB, RS485 and Ethernet				
Compressor Brand	Germany Secop, French Tecumseh, Germany Blitzer, etc.				
Cooling Mode	Air-cooled				
Humidifier	Heavy duty stainless steel 304 electrical heating humidifier				
<b>Dimension</b>					
Workspace Dimensions (mm)	350*360*400	500*400*500	600*500*750	800*700*900	1000*1000*1000
[WxDxH] (in)	13.8*14.2*15.7	19.7*15.7*19.7	23.6*19.7*29.5	31.5*27.6*35.4	39.4*39.4*39.4
Exterior Dimensions (mm)	880*870*1520	980*920*1600	1080*1050*1860	1280*1270*2050	1480*1500*2150
[WxDxH] (in)	34.6*34.3*59.8	38.6*36.2*63.0	42.5*41.3*73.2	50.4*50.0*80.7	58.3*59.1*84.6
Installed Power	3.5 kW	3.8 kW	5 kW	7 kW	13 kW
Electrical Supply	North America: 208~240V, 1P, 60Hz or 208~240V, 3P, 60Hz International: 220~240V, 1P, 50Hz or 380~400V, 3P, 50Hz				
<b>Weight</b>					
Gross Weight	260 kg   573 lbs	300 kg   661 lbs	400 kg   882 lbs	500 kg   1102 lbs	780 kg   1719 lbs



# TCH\*V-R\* series

## Test Chamber with Rapid Temp. Cycling Rate

Experience unmatched efficiency with LAB1ST's test chamber featuring rapid temperature change capabilities. Offering heating and cooling rates over twice as fast as conventional models, TCH\*V-R\* series chambers achieve rapid heating and cooling rates with 5°C/min, 10°C/min, and 15°C/min. Operating seamlessly within a wide temperature range from -70°C to 150°C, and offering rapid temperature changes from -40°C to 120°C, these chambers are designed to meet the most demanding testing requirements with optimal speed and reliability. Ideal for applications requiring swift environmental adjustments without compromising accuracy.



- Faster heating and cooling speed (the heating and cooling rate of the R series is more than 2X that of the conventional series)
- The rapid temperature change is divided into 3 levels: 5°C/min, 10°C/min, and 15°C/min
- Operating temperature range: -70°C to 150°C
- Rapid temperature change range: -40°C to 120°C

<b>Series</b>	<b>TCH*V-R*</b>
Workspace volume	100L [3.5 cu ft], 225L [7.9 cu ft], 500L [17.8 cu ft], 1000L [35.3 cu ft]
<b>Performance</b>	
Temperature Range	-70°C~150°C [-94°F~302°F], customizable
Rapid Temperature Cycling Range	-40°C~120°C [-40°F~ 248°F]
Temperature Fluctuation	±0.5 °C
Temperature Uniformity	±1 °C
Heating Rate	Standard: 3.0-5.0 °C/min Rapid temperature cycling: 5 °C/min, 10 °C/min, 15 °C/min
Cooling Rate	Standard: 0.7-1.5 °C/min Rapid temperature cycling: 5 °C/min, 10 °C/min, 15 °C/min
Humidity Range	20%~98% RH
Humidity Fluctuation	±3%
Humidity Uniformity	±2~±3% RH
<b>General Information</b>	
Chamber Material	SUS304
Shelf	2 pcs [or more], SUS304 wired plates with support
Max. Shelf Load	10 kg [22 lbs]
Cable Port	50 mm [2 inch]
Control Panel	7 inch industrial color touch screen, temperature and humidity program controller
Communication	USB, RS485 and Ethernet
Compressor Brand	Germany Secop, French Tecumseh, Germany Blitzer, etc.
Cooling Mode	Air-cooled / water-cooled
Humidifier	Heavy duty stainless steel 304 electrical heating humidifier

## Rapid Temperature Change [for THC\*V-R series]



5 °C/min Rapid Temperature Cycling Test Chamber



10 °C/min Rapid Temperature Cycling Test Chamber



15 °C/min Rapid Temperature Cycling Test Chamber

Model	Workspace Volume	Rapid Temp. Cycling Rate	Installed Power	Cooling Mode
TCH100V-R5	100L [3.5 cu ft]	5 °C/min	7.5 kW	Air-cooled
TCH225V-R5	225L [7.9 cu ft]	5 °C/min	12 kW	Air-cooled
TCH500V-R5	500L [17.8 cu ft]	5 °C/min	20 kW	Air-cooled / water-cooled
TCH1000V-R5	1000L [35.3 cu ft]	5 °C/min	26 kW	Air-cooled / water-cooled
TCH100V-R10	100L [3.5 cu ft]	10 °C/min	16 kW	Air-cooled / water-cooled
TCH225V-R10	225L [7.9 cu ft]	10 °C/min	26 kW	Air-cooled / water-cooled
TCH500V-R10	500L [17.8 cu ft]	10 °C/min	38 kW	Water-cooled
TCH1000V-R10	1000L [35.3 cu ft]	10 °C/min	55 kW	Water-cooled
TCH100V-R15	100L [3.5 cu ft]	15 °C/min	22 kW	Water-cooled
TCH225V-R15	225L [7.9 cu ft]	15 °C/min	33 kW	Water-cooled
TCH500V-R15	500L [17.8 cu ft]	15 °C/min	60 kW	Water-cooled
TCH1000V-R15	1000L [35.3 cu ft]	15 °C/min	88 kW	Water-cooled

Model	Electrical Supply	Exterior Dimensions [WxDxH]	Gross Weight
TCH100V-R5	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1100*900*1600 mm; 43.3*35.4*63.0 in	460 kg   1014 lbs
TCH225V-R5	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1200*1170*1950 mm; 47.2*46.1*76.8 in	590 kg   12994 lbs
TCH500V-R5	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1460*1200*2030 mm; 57.5*47.2*79.9 in	900 kg   19844 lbs
TCH1000V-R5	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1580*1500*2120 mm; 62.2*59.1*83.5 in	1100 kg   2423 lbs
TCH100V-R10	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1100*1370*1740 mm; 43.3*53.9*68.5 in	550 kg   1213 lbs
TCH225V-R10	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1260*1510*2080 mm; 49.6*59.4*81.9 in	680 kg   1496 lbs
TCH500V-R10	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1460*1590*2220 mm; 57.5*62.6*87.4 in	1100 kg   2423 lbs
TCH1000V-R10	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1700*1600*2180 mm; 66.9*63.0*85.8 in	1300 kg   2867 lbs
TCH100V-R15	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1200*1770*1800 mm; 66.9*63.0*85.8 in	650 kg   1433 lbs
TCH225V-R15	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1260*1510*2080 mm; 49.6*59.4*81.9 in	800 kg   1763 lbs
TCH500V-R15	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1500*1780*2220 mm; 59.1*70.1*87.4 in	1200 kg   2646 lbs
TCH1000V-R15	208~240V, 3P, 60Hz; 380~400V, 3P, 50Hz	1700*1600*2180 mm; 66.9*63.0*85.8 in	1400 kg   3083 lbs

## Options



Lab1st offers extensive customization options for our temperature and humidity test chambers, ensuring they meet diverse industry needs with precision. From larger chamber sizes to specialized humidity ranges (10% to 98%), walk-in designs, and ultra-low humidity capabilities (2% to 10%), we cater to specific requirements.

Our chambers are tailored to enhance testing accuracy and efficiency across various applications. They are designed to optimize performance and flexibility in any testing environment.



### Configurations

- Larger size
- Walk-In chambers
- Water purifying filter
- Cable hole size and quantity
- All stainless steel housing
- Data logging printer
- LN2 cooling for faster cool-down and ultra-low temperature
- Customized chamber material, such as SS316L, PTFE spraying, etc.
- Optional water cooling (compressor)

### Control Capacities

- Ultra-low humidity range low humidity range of 2%-10%
- Wide humidity range 10%-98%
- Only Temperature Control
- Special temperature range
- Rapid heating and cooling speed
- Set the temperature rise and fall curve (slope)
- Material temperature control (additional temperature probe and controller)
- Special voltage, such as 460~480V, 3P, 60Hz

## Custom Cases



1500L Temperature Test Room with Double Window



Customized Front - Rear Structure



Negative Pressure Test Chamber



1500L Temperature Test Room with Double Door



3m³ customized structure with double Doors



6°C/min Rapid Temperature Cycling Test Chamber



10°C/min Rapid Temperature Cycling Test Chamber



15°C/min Rapid Temperature Cycling Test Chamber



21°C/min Rapid Temperature Cycling Test Chamber



Customized Structure with 4 Doors



Adjustable Temperature and Humidity Chamber



Customized Up - Down Structure



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