SenseFuture

Striving for the Bright Future of Precision Optoelectronic Measurement.

PRODUCT MANUAL

SENSEFUTURE TECHNOLOGIES CO., LTD.

SenseFuture Technologies Co., Ltd.

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STRIVING FOR THE BRIGHT FUTURE OF PRECISION OPTOELECTRONIC MEASUREMENT

Contents

Company Profile

SenseFuture Technologies Co., Ltd. is a high-tech enterprise incubated by the Shenzhen Institute for Technology Innovation,NIM,committed to Striving for the Bright Future of Precision Optoelectronic Measurement. Adhering to the dual-drive approach of market demand and technological capability, we provide customers with high-quality and high-efficiency products and solutions.

Brand Story

The Founder's Original Technical Vision

The story of SenseFuture™ begins with the founder Lei Yang's passion for technology. Fascinated by electronic circuits since childhood, he taught himself Basic programming in middle school and later distinguished himself by winning first prize in the National Undergraduate Electronic Design Contest. During his Ph.D. at Tsinghua University, under the guidance of Researcher Jintao Zhang, an expert in temperature metrology, he focused on laser-based carbon isotope research and led the development of a high-precision CO_2 isotope analyzer.

The Turning Point of Technological Breakthrough

During the R&D process, the limitations of conventional temperature control technology in meeting the instrument's precision requirements drove Yang to pursue a breakthrough. He spearheaded the development of an ultra-precision temperature controller, overcoming critical technical challenges and establishing the core technology behind SenseFuture™. As of 2025, we have provided innovative thermal management solutions to nearly 1,000 clients across more than 10 countries and regions, continuously empowering scientific research and precision instrument development with our cutting-edge temperature control technology.

Company Culture

/ Business Mission

Striving for the Bright Future of Precision Optoelectronic Measurement.

/ Corporate Vision

Becoming a Sustainable Business.

/ Core Values

Sincerity, Integrity, Growth

/ Business Philosophy

Original Aspiration Shapes the Future, Innovation Creates Value,
Sharing Enhance Cohesion

/ Development Outlook

An Appropriate Development in the Security.

/ Talent View

For Those With Virtue and Talent, Exceptive Admission by Highly;
For Those With Virtue but Lacking Talent, Cultivating Them to be Talents;
For Those With Talent but Without Virtue, Employment Shall be Limited;
For Those Without Either Virtue or Talent, Never be admitted to us.

Research Capability

Shenzhen Institute for Technology Innovation,NIM

Incubation Base

SITI,NIM is a pioneering research institution established through strategic collaboration between China's State Administration for Market Regulation and the Shenzhen Municipal Government. Developed with top-tier planning and construction standards, it has been designated as:

- A Key Scientific Innovation Project under Shenzhen's 14th Five-Year Plan
- A Strategic Engine to position Shenzhen as China's high-tech hub

Dr. Yang Lei

Founder of the Company

Dr. Yang obtained his Ph.D. in Precision Instrumentation from Tsinghua University in 2019, specializing in gas detection technology research. He served as the second principal investigator for an international cooperation project under China's Ministry of Science and Technology. His scholarly work includes approximately 20 publications in prestigious international journals including Physical Review Letters and Optics Express, along with over 30 patent applications and granted patents.

He serves as an external thesis advisor for Tsinghua University's Master of Engineering Management (MEM) program. His distinguished honors include being recognized as a Shenzhen High-Level Reserve Talent.

Prof. Zhang Jintao

Senior Consultant

Prof. Zhang, Chief Researcher at the National Institute of Metrology,China (NIM),is a globally renowned temperature metrology expert. His groundbreaking research on acoustic gas thermometry for determining the fundamental temperature standard (Boltzmann constant) has produced results adopted by CODATA for temperature standard redefinition.

Notably invited to present plenary reports at both the World Temperature Symposium and the Royal Society's "Implementing the New Kelvin" conference.

Technological Innovation

Three Core Technologies

- **High-Precision Temperature Control Technology**
- **Sub-μA Low-noise Current Driving Method**
- ***SpectMaster*™ Laser Spectroscopy Detection Algorithm**

Certificate Overview

Utility Model Patent Certificate

Design Patent Certificate

Computer Software Copyright Registration Certificate

Quality Management System Certification

FCC Supplier's Declaration of Conformity

Certificate of Conformity

Business Qualification

Guangming Intelligent Manufacturing Industry Association

Shenzhen Sensors and Intelligent Instrumentation Industry Association

Shenzhen Optics&Optoelectronics Industry Association

Exhibition Overview

2024.04

The 7th National Academic Forum on Laser Spectroscopy Technology

2024.05

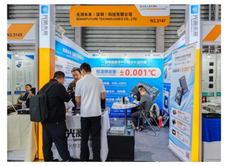
The 2nd Shenzhen International Ecological Environment Monitoring Industry Expo

2024.09

The 25th China International Optoelectronic Exposition (CIOE 2024)

2024.11

The 17th International Forum for China On-line Analytical Instrument Application and Development Expo



2025.03

Laser World of Photonics China

2025.05

The 8th National Academic Forum on Laser Spectroscopy Technology

2025.06

Laser World of Photonics

2025.09

The 26th China International Optoelectronic Exposition (CIOE 2025)

The 7th Shenzhen International Semiconductor Exhibition (SEMI-e 2025)

Business Partners

HUAWEI · Apple · 大族激光 HAN'S LASER · 东微半导体 ORIENTAL SEMICONDUCTOR · ZOLWELL TECHNOLOGIES

BGI华大 · 特优科技 TEYITECH · menovex 密尔医疗 · ThermoFisher SCIENTIFIC · Yawei 亚威

Hymson 海目星激光 · 清华大学 Tsinghua University · 北京大学 PEKING UNIVERSITY · 中国计量科学研究院 National Institute of Metrology, China · The Hong Kong Polytechnic University 香港理工大學

Caltech · NUS National University of Singapore · PRINCETON UNIVERSITY · 南方科技大学 Southern University of Science and Technology · 中国科学院大学 University of Chinese Academy of Sciences

Digital Temperature Controller

TEC103

- **Single-channel**
- **Stability: ±0.001°C**

Applications

The TEC103 series is primarily utilized for temperature measurement and regulation in optical components, such as lasers, detectors, and small sample chambers.

DFB/ICL/QCL Laser

Detector

PCB

Sample Chamber

Features

Temperature Measurement:

- Resolution: 0.1 mK
- Long-term Stability: <1 mK over 24h

Temperature Control:

- Stability: ±0.001°C
- Output Modes: Configurable bipolar/unipolar
- Ramp Rate Limit: Adjustable maximum temperature change rate

Control & Connectivity:

- Supports NTC thermistor input
- Full UART Command Set
- Open-Platform Architecture

Design Features:

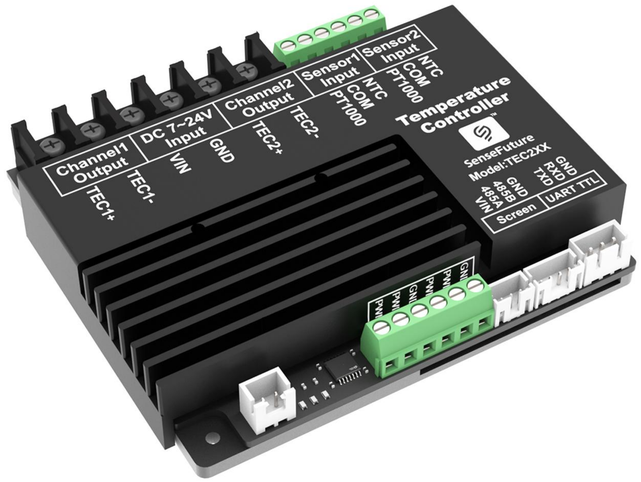
- Chip-scale Integration: Optimized for PCB layout
- Overheat Protection: Reliable board-level safety
- Parameter Configuration: On-screen or PC software control

Product Parameters

Parameters & Models	TEC103L	TEC103
Sensor Support	NTC	
Temperature Measurement Range	-200~600℃	
Measurement Sensitivity	0.001℃	0.0001℃
Optimal Temperature Control Stability	±0.001℃	±0.001℃
Ambient Temp Drift	0.0001℃/℃	
Communication	TTL UART Interface (supports ASCII communication protocol) RS485 Interface (supports both Modbus and ASCII protocols)	
Power Supply	7~24V	
Output Polarity	Bidirectional, Unidirectional, or Command-Controlled Selectable	
Channels	1	
Max Output Voltage	±90% of Vin (configurable)	
Output Current Range	0~±3A	
Max Output Current	±4A	
Operating Temp Range	-55~60℃	
Operating Humidity Range	0~98%RH	
Heat Dissipation	No additional cooling required	
PCB Overheat Protection	Yes	
Power-off Memory	Yes	
PID Parameters	User-adjustable	
Dimensions	46.5*39.0*9.6mm	
Weight	≈30g	

TEC207/215

- **Dual-Channel**
- **Stability: ±0.001°C**



Applications

The TEC207/215 series temperature controllers are primarily designed for temperature measurement and control in large sample chambers.

Sensor Module

Optical Path

PCB

Internal Components

Features

Temperature Measurement:

- Resolution: 0.1 mK
- Long-term Drift: <0.001°C over 24h

Temperature Control:

- Stability: ±0.001°C
- Output Modes: Configurable bipolar/unipolar
- Ramp Rate Limit: Adjustable maximum temperature change rate

Sensor & Output:

- Supported Sensor: NTC/PT100/PT1000
- High-power Output:
  Single-channel: 24V/15A max
  Dual-channel combined: 30A max

Protection & Control:

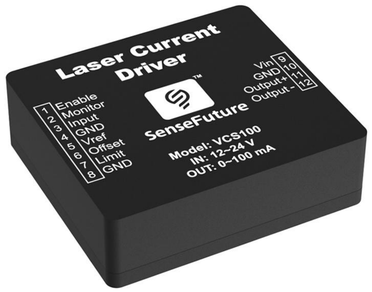
- Communication Interfaces: TTL UART & RS485
- Protocols: ASCII & Modbus (open-platform)
- Additional Support: Solid-state relay (SSR) compatibility
- Parameter Configuration: On-screen or PC software control

Product Parameters

Parameters & Models	TEC207L	TEC207	TEC215L	TEC215
Sensor Support	NTC/PT100/PT1000			
Temperature Measurement Range	-270~1000℃			
Measurement Sensitivity	0.001℃	0.0001℃	0.001℃	0.0001℃
Optimal Temperature Control Stability	±0.01℃	±0.001℃	±0.01℃	±0.001℃
Ambient Temp Drift	0.0001℃/℃			
Communication	TTL UART Interface (supports ASCII communication protocol) RS485 Interface (supports both Modbus and ASCII protocols)			
Power Supply	7~24V			
Output Polarity	Bidirectional, Unidirectional, or Command-Controlled Selectable			
Channels	2			
Max Output Voltage	±90% of Vin (configurable)			
Output Current Range	0~±7A per Channel		0~±15A per Channel 0~±80A (Solid-State Relay)	
Max Output Current	±10A		±20A	
Operating Temp Range	-55~60℃			
Operating Humidity Range	0~98%RH			
Heat Dissipation	No additional cooling required			
PCB Overheat Protection	Yes			
Power-off Memory	Yes			
PID Parameters	User-adjustable			
Dimensions	94.3*79.5*20.5mm			
Weight	≈240g			

VCS

- **Current Noise: RMS <1μA**



Applications

VCS is primarily used for low-noise current driving of lasers, allowing adjustment of laser driving current by varying the input voltage.

DFB Laser

ICL/QCL Laser

LD Laser

Features

- **Ultra-Low Noise:** <1μA RMS current noise
- **High Voltage Output:** Up to 23V (supports DFB/VCSEL/ICL/QCL lasers)
- **High Current Output:** Up to 1A (covers most low-power lasers)
- **Adjustable Current Limit:** Potentiometer-controlled for laser protection
- **Remote Control:** Enable/disable output & real-time current monitoring
- **Stable Bias Current:** Ultra-stable output with modulation capability

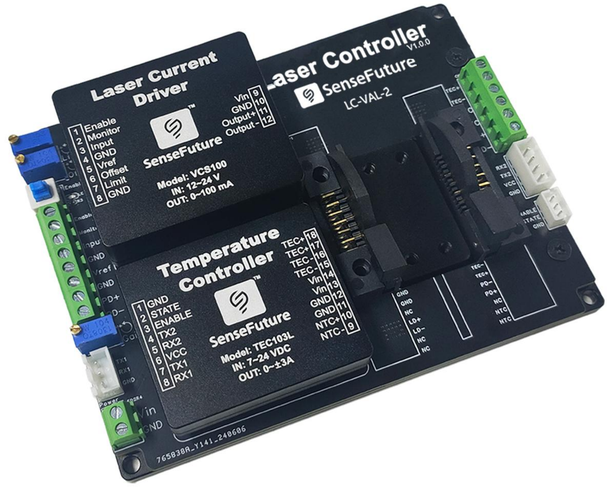
Product Parameters

Parameters & Models	VCS20	VCS100	VCS250	VCS500	VCS1000
Current-to-Voltage Ratio	4mA/V	20mA/V	50mA/V	100mA/V	200mA/V
Maximum Output Current	20mA	100mA	250mA	500mA	1000mA
Supply Voltage	12~24V				
Output Voltage / Compliance Voltage	Supply Voltage-1 V				
Current Noise	<0.9μA				
Temperature Coefficient	<50ppm/℃				
Leakage Current	2mA				
Setting Rise/Fall Time	800/600ns				
Modulation Depth	90%@1MHz				
Bandwidth (3dB)	2MHz				
Modulation Input Voltage Range	0~5V				
Input Pin Impedance	10MΩ				
Remote Enable Voltage Input	Output Enable: High Level (>2V, I>5mA) Output Disable: Low Level (<2V)				
Current Monitor Ratio	250V/A	50V/A	20V/A	10V/A	5V/A
Operating Temp Range	-20~60℃				-20~35℃
Operating Humidity Range	0~98%RH				
Heat Dissipation	No additional cooling required				
Dimensions	47.5*42.8*19.5mm		47.5*42.8*32.2mm		
Weight	≈50g		≈100g		

Laser Driver Board

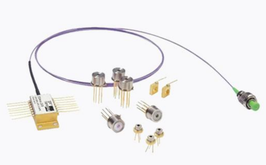
LC

- **Current Noise: RMS <1μA**
- **Stability: ±0.001°C**



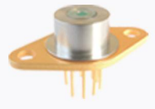
Applications

LC Laser Driver Board is designed for driving all types of lasers (e.g., VCSEL, DBR, DFB, LD, ICL, QCL) up to 1000mA. The laser drive current can be adjusted by varying the input voltage.



DFB Laser

ICL/QCL Laser



LD Laser

Features

Modular Design:

- Block-based architecture allows flexible configuration of temperature control modules and current drivers.
- Compatible with all low-power lasers: VCSEL, DBR, DFB, LD, ICL, QCL, etc.

Ultra-High Temperature Stability:

- ±0.001°C temperature control precision.

Ultra-Low Noise Current Output:

- RMS current noise <1μA.

High Power Output: • Maximum output: 23V/1A.

Comprehensive Protection: • Adjustable current limit for laser safety.

High-Speed Modulation: • Supports current modulation up to 2MHz.

Protection & Control:

- Remote enable/disable control.
- Real-time output current monitoring.
- Integrated photodiode (PD) monitor.

Product Parameters

Parameters & Models	LC100mA-0.001℃-1
Maximum Output Current	20mA (Matching with VCS20) 100mA (Matching with VCS100) 250mA (Matching with VCS250) 500mA (Matching with VCS500) 1000mA (Matching with VCS1000)
Supply Voltage	12~24V
Maximum Output Voltage/Compliance Voltage	Vin-1V
Current Noise	<1μA
Adjustment Rise/Fall Time	800/500ns
Modulation Depth	90%@500kHz
Bandwidth	2MHz
Modulation Input Voltage	0~5V
Input Pin Impedance	>1MΩ
Current Temperature Drift	<20ppm/℃
Maximum TEC Output Current	±3A
Maximum TEC Output Voltage	Vin×90% V
Temperature Stability	±0.01°C (Matching with TEC103L) ±0.001°C (Matching with TEC103)
Operating Temp Range	-15~60°C (Matching with VCS20/100/250/500) -15~35°C (Matching with VCS1000)
Operating Humidity Range	0~98%RH
Heat Dissipation	No additional cooling required
Dimensions	121.0*93.0*28.0mm (Matching with VCS20/100) 111.2*93.0*30.4mm (Matching with VCS250/500/1000)
Weight	—— (Matching with VCS20/100) —— (Matching with VCS250/500/1000)

PID Temperature Controller

HTC207/215

- **Dual-Channel**
- **Stability: ±0.001°C**

Applications

The HTC Series PID Temperature Controller is specifically designed for high-precision temperature measurement and control applications across various industries.


Sensor Module


Optical Path


PCB

Internal Components

Features

Temperature Measurement:

- Resolution: 0.1 mK
- Long-term Drift: <0.001°C over 24h

Temperature Control:

- Stability: ±0.001°C
- Output Modes: Configurable bipolar/unipolar
- Ramp Rate Limit: Adjustable maximum temperature change rate

Sensor & Output:

- Supported Sensor: NTC/PT/CCR
- High-power Output:
  Onboard Drivers: 24V/15A per channel
  Supports external solid-state relay for ultra-high current output

Protection & Control:

- Communication Interfaces: TTL UART & RS485
- Protocols: ASCII & Modbus (open-platform)
- Parameter Configuration: On-screen or PC software control

Product Parameters

Parameters & Models	HTC207L	HTC207	HTC215L	HTC215
Sensor Support	NTC/PT/CCR			
Temperature Measurement Range	-270~1000℃			
Measurement Sensitivity	0.001℃	0.0001℃	0.001℃	0.0001℃
Optimal Temperature Control Stability	±0.01℃	±0.001℃	±0.01℃	±0.001℃
Ambient Temp Drift	0.0001℃/℃			
Communication	TTL UART Interface (supports ASCII communication protocol) RS485 Interface (supports both Modbus and ASCII protocols)			
Power Supply	AC180~264V, 47~63Hz			
Output Polarity	Bidirectional, Unidirectional, or Command-Controlled Selectable			
Channels	2			
Max Output Voltage	±90% of Vin (configurable)			
Output Current Range	0~±7A per Channel		0~±15A per Channel 0~±80A (Solid-State Relay)	
Max Output Current	±10A		±20A	
Operating Temp Range	-55~60℃			
Operating Humidity Range	0~98%RH			
Heat Dissipation	No additional cooling required			
PCB Overheat Protection	Yes			
Power-off Memory	Yes			
PID Parameters	User-adjustable			
Dimensions	340*240*128mm			
Weight	≈4kg			

Temperature Stability Chamber

TEB

- **Temperature Range: 13°C ~ 60°C**
- **Stability: ±0.005°C**

Applications

TEB Temperature Stability Chamber provides customers with a high-precision thermal environment (±0.005°C) during product R&D phases. This system enables placement of temperature-sensitive components including optical elements, PCBs, sample chambers, sensors, or entire instruments within the controlled space, thereby enhancing research accuracy and facilitating thermal impact analysis on critical components.


Standard Resistor


Optical Path


Sample Chamber

Internal Components

Features

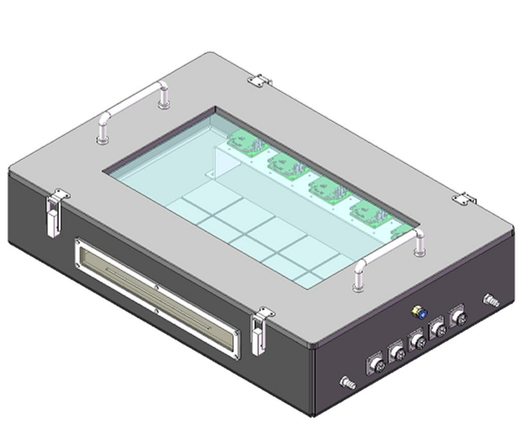
- **Easy to Use:** Plug-and-play operation with PC software connectivity for real-time monitoring.
- **Customizable Foam Chamber:** Users can modify openings (includes a hole-cutting tool).
- **High Precision Control:** Typical temperature stability of ±0.005°C.
- **Wide Temperature Range:** Broadly adjustable setpoint range.

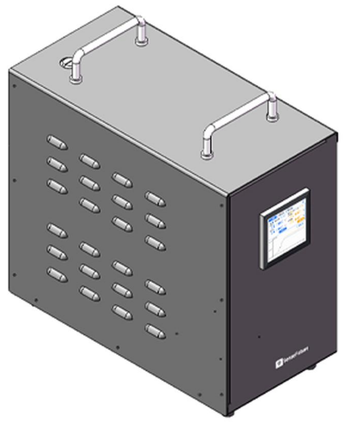
Product Parameters

Parameters	Min	Typ	Max
24h Temperature Stability	/	±0.005@30℃	±0.01℃
Temperature Setting Range		13~60℃@25℃	
Internal Temperature Gradient		0.15℃	
Internal Air Temperature Stability (Ambient temperature 25±2°C)		±0.02@30℃	
Power Requirements		AC 220V	
Power Consumption		<102W	
Operating Temp Range	-15℃	Room Temperature	60℃
Operating Humidity Range	0%RH	/	98%RH
	When cooling in high-humidity environments (>80%RH), the chamber's internal heat sinks are prone to condensation formation.		
Over-Temperature Protection		Yes	
Power-off Memory		Yes	
PID Parameters		User-adjustable	
External Dimensions		560*460*390mm	
Internal Dimensions		500*380*340mm A fan protrudes at the exact center of the interior with dimensions of 90*90*53mm	
Construction Material		High-Performance Expanded Polypropylene (EPP) Foam	
Weight		≈7kg	

Temperature Aging Test Chamber

Temperature Stability: ±0.1℃ / ±0.01℃
Temperature Range: -40℃ ~ 140℃





Applications

This product consists of two main components: **High/Low Temperature Test Bench & Water Cooling Temperature Controller**. Utilizing semiconductor thermoelectric coolers (TECs) as combined heating/cooling devices, the system constructs a rapid high/low temperature testing platform. It is designed for fast thermal cycling tests on a wide range of devices, including: **Microdisplays/LEDs/Wafers/IC chips/Detectors/Sensors/Photomultiplier tubes (PMTs)**.

Features

- **Fast Temperature Cycling:** Accelerates aging tests with rapid -40°C to +140°C transitions.
- **Compact & Mobile:** Space-saving design for easy deployment.
- **High Precision:** ±0.1°C stability (±0.01°C optional) and <±0.1°C uniformity.
- **Reliable & Safe:** Overcurrent/overvoltage/overtemperature protection.
- **Water-Cooled:** Efficient heat dissipation for stable performance.
- **Customizable:** Tailored solutions for specialized requirements.

Product Parameters

- **High/Low Temperature Test Bench**

Parameters & Models	TECP
Built-in Sensor	PT1000
Temperature Change Rate	0~10°C/min
Power Requirements	<12V, <10A
Platform Size	50*50mm (customizable)
Enclosure Size & Weight	150*150*100mm & ≈2kg (customizable)
Storage Temperature	-40~70°C
Operating Temperature	-10~50°C
Operating Humidity	0~98%RH (non-condensing)
Other Operating Conditions	Atmospheric Pressure: 80~110 kPa

- **Water Cooling Temperature Controller**

Parameters & Models	WCTC115L	WCTC115	WCTC215L	WCTC215
Sensor Support	NTC/PT100/PT1000			
Temperature Measurement Range	-200~850℃			
Measurement Sensitivity	0.001℃	0.0001℃	0.001℃	0.0001℃
Optimal Temperature Control Stability	±0.01℃	±0.001℃	±0.01℃	±0.001℃
Ambient Temp Drift	0.0001℃/℃			
Communication	TTL UART Interface (supports ASCII communication protocol) RS485 Interface (supports both Modbus and ASCII protocols)			
Power Supply	AC180~264V, 47~63Hz			
Output Polarity	Bidirectional, Unidirectional, or Command-Controlled Selectable			
Channels	1		2	
Max Output Voltage	±90% of Vin (configurable)			
Output Current Range	0~±15A per Channel 0~±80A (Solid-State Relay)			
Max Output Current	±10A		±20A	
Operating Temp Range	-55~60℃			
Operating Humidity Range	0~98%RH			
Dimensions	400*200*350mm			
Weight	≈3kg			

High/Low Temperature Thermostatic Bath

Temperature Range: -70~100°C
Temperature Stability: ±0.02°C

Features

- **Wide Temperature Range:** -70~100°C (covers most lab applications)
- **High Precision Control:** ±0.02°C stability
- **Rapid Response:** Efficient heating/cooling system with fast settling time
- **User-Friendly Interface:** Touchscreen panel for temperature programming and monitoring
- **Durable Construction:** 304 stainless steel tank (corrosion/heat resistant)

Product Parameters

Parameters & Models	High/Low Temperature Thermostatic Bath
Operating Power	4.7kW
Temperature Range	-70~100°C
Temperature Stability	±0.05°C
Temperature Resolution	0.01°C
Tank Volume	100L
Tank Opening	40*35cm
Tank Depth	40cm
Pump Flow Rate	13L/min
Pump Head	3m
Overall Dimensions	85.5*81*130cm

Constant Temperature Chiller

Features

- **Efficient Compressor:** Rapid cooling with stable temperature maintenance
- **Touchscreen Control Panel:** User-friendly operation
- **Energy-Saving Design:** Reduced power consumption
- **Low Noise Operation:** Ideal for labs and quiet environments
- **Protections:** Flow Protection, High/Low Temp Alarm, Compressor Overload Protection, Ambient High Temp Alarm

Product Parameters

Parameters & Models	Constant Temperature Chiller
Voltage	AC 220~240V
Frequency	60Hz
Operating Current	3.2~14.2A
Compressor Power	2090W (2HP)
Temperature Range	-70~100°C
Cooling Capacity	6KW ±5%
Refrigerant	R22/R410a
Expansion Device	Capillary Tube
Max. Head	20m / 25m / 30m
Max. Flow Rate	20L/min / 27L/min / 80L/min
Pump Power	60W / 88W / 300W
Water Tank Capacity	15L
Dimensions & Net Weight	70Kg
Water Outlet	Φ10 Copper Barb (Default) / Φ10 Quick-Connect / Φ12 Quick-Connect / Φ19 Barb

Air-to-Air Heat Exchange Module

TEA100

Features

All products are designed to meet the cooling needs of many thermal management applications in the medical, analytical, industrial and telecom markets.

- Compact Design
- Precise Temperature Control
- Reliable Solid-state Operation
- DC Operation
- RoHS Compliant

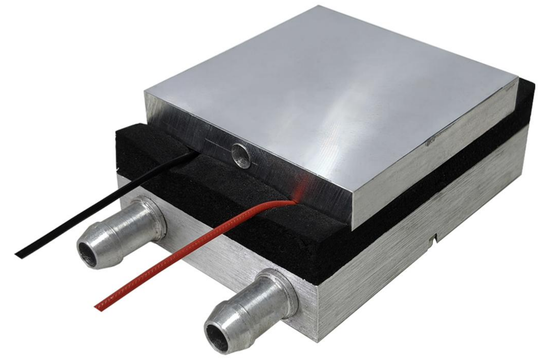
Product Parameters

Parameters & Models	TEA100
Cooling Power Qcmax	>100W
Running Current	6.5A
Startup Current	7.8A
Nominal Voltage	24V
Max Voltage	31V
Power Input	24V 200W / 31V 255W
Operating Temperature	-18~80°C
Weight	2.5kg
MTBF	100000fans – hrs
Performance Tolerance	±5%

High/Low Temperature Constant Temperature Stage

Features

- **Easy Installation:** Plug-and-play setup with matched accessories./ Ready for PC connection with monitoring software.
- **Wide Temperature Range:** -40°C to +140°C coverage/ Suitable for most lab/industrial applications.
- **Safety Assurance:** Low-voltage design (24V DC) minimizes shock risk./ Fan cooling system prevents overheating.
- **Customizable Options:** Extended temperature ranges and platform sizes available upon request.



Product Parameters

Parameters & Models	High/Low Temperature Constant Temperature Stage
Temperature Stability (24h) (Using TEC215 Controller & Matched Sensor)	±0.005°C @30°C
Temperature Gradient (Control Surface)	-40~140°C (Ambient 25°C)
Cooling Water Temperature	15~28°C (Ambient 25°C)
Temperature Gradient (Control Surface)	0.1°C
Temperature Stability (Ambient 25±2°C)	±0.01°C @30±30°C
Power Supply	DC 24V
Power Consumption	<150W
Operating Ambient Temperature	-55~85°C
Operating Ambient Humidity	0~98%RH (Note: Frost may form on cold stages at high humidity)
Control Surface Size	60*60mm
Sensor Mounting Hole	φ5mm, D30mm
Overall Dimensions	60*80*32mm (Protruding interface: 9.2*25mm)
Material	Aluminum Alloy
Weight	≈300g

Constant Temperature Stage

Temperature Range: -19~122°C
Temperature Stability: ±0.005°C

Features

- **Wide Temperature Range:** -19~122°C (covers most laboratory and industrial applications).
- **Portability:** Compact and lightweight design for easy installation in diverse environments.
- **Durability:** Advanced manufacturing ensures excellent corrosion resistance and mechanical strength, extending service life.
- **User-Friendly Interface:** Touchscreen panel for temperature programming and monitoring.
- **Safety:** Low-voltage design minimizes electric shock risks, while fan cooling prevents overheating.
- **Eco-Friendly & Energy-Efficient:** Low power consumption reduces operational costs.

Product Parameters

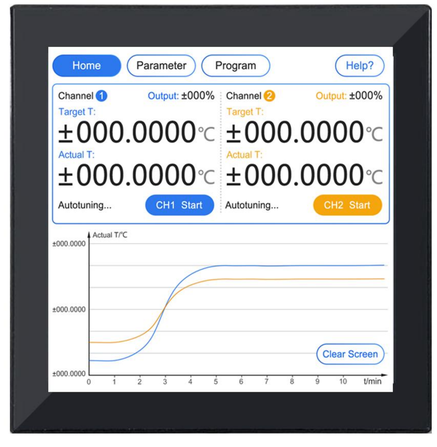
Parameters & Models	Constant Temperature Stage
Operating Voltage	12V
Operating Current	<5A
Sensor Type	NTC (10k B3950)
Min. Cooling (25°C ambient)	-19°C
Max. Heating (25°C ambient)	122°C
Temp. Stability (±10°C ambient)	±0.005°C
Cooling Method	Fan (12V)
Effective Control Area	100*100mm
Dimensions	118*118*148mm
Manufacturing Process	Sheet Metal

SCR Touch Screen

Features

Compatible with our TEC temperature controllers, it can be integrated with the controller, mechanical housing, power supply, and other components to form a complete temperature control system.

- **Core Hardware:** Based on the T5L0 chip, running DGUS II system (ultra-thin wired controller).
- **Display:** 4.0-inch IPS screen with 480×480 resolution and 262K colors, and fully laminated capacitive touchscreen.
- **Durability:** Triple-protection (dust/water/shock-resistant) design, uilt-in speaker and real-time clock (RTC).
- **Smart Functions:** Supports IR reception, real-time temperature/humidity display, and proximity sensing.



Product Parameters

Parameters & Models	SCR-485
Color Depth	18-bit 6R6GB
Active Display Area	71.9*68.0mm
Display Type	IPS, TFT LCD
Screen Type	Capacitive Touch Panel
Screen Structure	G+G Structure (Cover Glass + Glass) with Tempered Glass Surface
Operating Voltage	6~36V
Operating Current	190mA (VCC=1 2V, Backlight at Maximum) 80mA (VCC=12V, Backlight Off)
Operating Temperature	-10~60℃ (12V@60%RH)
Operating Humidity	10%~90%RH (Typical 60%RH)
Interface Cable	4Pin_2.0mm
Dimensions	86.0*87.2*16.9mm
Weight	≈105g

Thermoelectric Cooler

Temperature Difference: >75℃

Features

- Fast Cooling
- Precise Temperature Control
- Bidirectional Temperature Control
- High Reliability
- Compact and Easy to Use
- Eco-Friendly and Pollution-Free
- Multiple Models Available
- High Adaptability

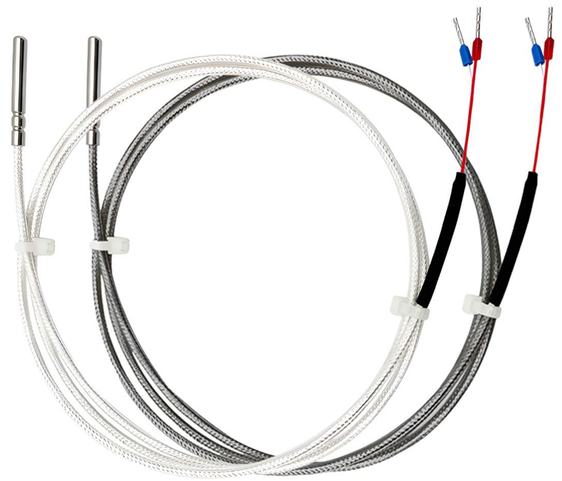
Product Parameters

Models & Parameters	Recommended Voltage	Max Current	Dimensions	Max Hot Side Temp
Standard:				
TEC1-12703	12V	3.1A	40*40*4.2mm	110℃
TEC1-12706		6.1A	40*40*3.8mm	
TEC1-12708		8.5A	40*40*4.2mm	
Upgraded:				
TEC1-12706-S		6.1A	40*40*3.8mm	230℃
TEC1-12708-S		8.5A	40*40*3.45mm	
TEC1-19912-S	24V	12.7A	40*44*3.2mm	

· For More Models, Contact Us

Temperature Sensor

PT1000



Features

- Excellent long-term stability
- High temperature measurement accuracy
- Fast response time
- Strong vibration resistance
- Resistant to thermal shock
- Low self-heating effect
- Supports user customization

Product Parameters

Parameters & Models	PT1000--200-200-2L	PT1000-0-600-2L
Accuracy Class	Class A	Class AA
Permissible Error	(±0.10+0.002 | t |)	(±0.15+0.002 | t |)
Temperature Range	-200~200°C	0~600°C
Wire Length	1000mm (Customizable)	
Probe Size	Φ3×30mm	
Wire Configuration	2-wire	
Response Time	Water @0.5m/s: 0.5s Air @2m/s: 10.05s	

Low Drift NTC Thermistor

Annual Drift: <0.001°C
Accuracy: <0.001°C

Features

- High Stability
- High Precision
- Long Lifespan
- Wide Temperature Range
- Fast Response
- Excellent Linearity
- Strong Anti-Interference Capability

Product Parameters

Parameters & Models	NTC-0.01	NTC-0.001
Zero-power Resistance @0°C	~10kΩ	
Annual Drift @-5~25°C	<0.01°C	<0.001°C
Accuracy @-5~25°C	<0.01°C	<0.001°C
Operating Temperature	-5~25°C	
Insulation Resistance	≥500MΩ	
Dielectric Strength	1500V/AC	

Temperature Control System Customization Services

Professional Team
Custom Solutions
Efficient Services

- We provide comprehensive customized temperature control systems, from design to implementation, delivering efficient and reliable solutions.
- Feel free to contact us for consultation—we are committed to offering you premium service.
- E-mail: sales@sensefuture.com

Our Strengths

- Expert Design & Development

Our engineering team designs optimized temperature control systems tailored to your specific needs. We support ultra-wide temperature ranges to meet precise control requirements in various environments.

- Flexible Customization

Whether for laboratories, industrial production, or special environments, we provide tailor-made solutions. Custom features include remote monitoring, automated control, data logging, and more.

- High-Quality Assurance

Utilizing internationally leading temperature control technologies and premium materials, our systems undergo rigorous testing to ensure stability and durability. All products meet strict quality inspections and comply with international standards.

- One-Stop Service

From needs analysis and solution design to installation and debugging, we offer full-process technical support. Our after-sales team is on standby to ensure long-term system reliability.

Customization

1. Contact Customer Service
2. Requirement Submission
3. Evaluation & Quotation
4. Production & Processing
5. Product Acceptance
6. Technical Support

Original Aspiration Determines the Future,

Innovation Creates Value,

Sharing Unites Hearts.

Looking forward to achieving win-win cooperation with you!