

HTC

Benchtop Temperature Controller

PRODUCT MANUAL

Striving for the Bright Future of Precision Optoelectronic Measurement.

01 Product Functions

The HTC benchtop temperature controller is primarily designed for high-precision temperature measurement and control across various applications.



HTC Benchtop Temperature Controller Product Image (product functions may be iterated)

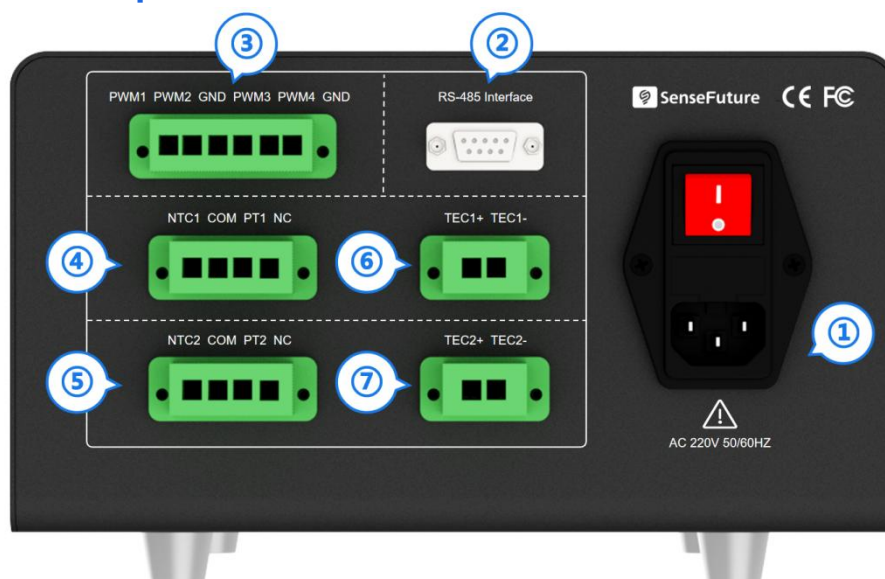
02 Product Features

- Measurement sensitivity: 0.0001°C; Measurement drift (24h): <0.001°C
- Temperature control stability: ± 0.001 °C (dependent on the controlled object and parameters) – meets stringent temperature control requirements for semiconductor laser applications.
- Supports both bipolar and unipolar output modes; programmable ramp rate limiting for temperature change.
- Compatible with NTC thermistor sensors and PT platinum resistance temperature sensors.
- High-power output capability (up to 24V/15A per channel; dual channels can be combined for 30A output).
- Built-in over-temperature protection for the circuit board, ensuring reliable performance.
- Parameter setting via on-screen display or PC-based control software; all settings are retained after power-off, facilitating production workflows.
- Equipped with an RS485 communication interface; supports both ASCII and Modbus communication protocols – an open-platform design.
- Supports solid-state relays.

03 Specifications

Parameter	Model					
	HTC115L	HTC115	HTC207L	HTC207	HTC215L	HTC215
Supported sensors	NTC/MF501/PT1000/PT100					
Measurable temperature range	-270~850℃					
Measurement resolution	0.001℃	0.0001℃	0.001℃	0.0001℃	0.001℃	0.0001℃
Measurement drift caused by ambient temperature	0.0001℃/℃					
Best temperature-control stability(related to your temperature-control fixture)	±0.01℃	±0.001℃	±0.01℃	±0.001℃	±0.01℃	±0.001℃
Communication method	Default: RS485 serial port, supporting both Modbus and ASCII communication protocols.					
Supply voltage range	170~264V AC					
Output polarity	Bidirectional, unidirectional, or communication-specified output					
Number of output channels	1		2			
Maximum allowable output voltage	±90% Vin (settable)					
Output current range (SSR: solid-state relay)	0 to ±15 A/channel 0 to ±80A/SSR		0 to ±7 A/channel		0 to ±15 A/channel 0 to ±80A/SSR	
Output current limit	±20A		±10A		±20A	
Operating ambient temperature range	-55~60℃					
Operating ambient humidity range	0~98%RH					
Cooling requirement	No additional cooling is required within the rated operating range					
PCB over-temperature protection	Yes					
Power-off memory	Yes					
PID parameters	Auto-tuning / user adjustable					
Dimensions	230 × 320 × 142 mm (±2 mm), including feet.					
Weight	Approx. 3kg					

04 Interface Description



	Pin name	Pin type	Pin description
①	Power switch	Input	Connect or disconnect the device power supply to start/stop the unit or to cut off power.
②	RS-485 Interface	Input/Output	RS485 communication connector: Female DB9. Communication settings: 8 data bits, 1 stop bit, no parity, baud rate 38400.
③	PWM1	Output	Channel 1 – Solid-state relay control terminal 1: Voltage 24 V, default frequency 10 Hz (adjustable).
	PWM2	Output	Channel 1 – Solid-state relay control terminal 2: Voltage 24 V, default frequency 10 Hz (adjustable).
	GND	Input	Power input negative (low-current) terminal.
	PWM3	Output	Channel 2 – Solid-state relay control terminal 3: Voltage 24 V, default frequency 10 Hz (adjustable).
	PWM4	Output	Channel 2 – Solid-state relay control terminal 4: Voltage 24 V, default frequency 10 Hz (adjustable).
	GND	Input	Power input negative (low-current) terminal.
④	NTC1	Input	Channel 1 – NTC thermistor sensor input.
	COM	Input	Channel 1 – Common interface for Pt1000 platinum RTD and NTC thermistor.
	PT1	Input	Channel 1 – Pt1000 platinum RTD sensor input.
	NC	Input	Reserved interface – do not connect.
⑤	NTC2	Input	Channel 2 – NTC thermistor sensor input.
	COM	Input	Channel 2 – Common interface for Pt1000 platinum RTD and NTC thermistor.

	PT2	Input	Channel 2 – Pt1000 platinum RTD sensor input.
	NC	Input	Reserved interface – do not connect.
⑥	TEC1+	Output	Channel 1 – Temperature control output positive (+): Normally connected to the positive terminal of the TEC (thermoelectric cooler).
	TEC1-	Output	Channel 1 – Temperature control output negative (-): Normally connected to the negative terminal of the TEC.
⑦	TEC2+	Output	Channel 2 – Temperature control output positive (+): Normally connected to the positive terminal of the TEC (thermoelectric cooler).
	TEC2-	Output	Channel 2 – Temperature control output negative (-): Normally connected to the negative terminal of the TEC.

05 Temperature Control System Customization Service

We have comprehensive temperature-control solution capabilities and have customized temperature-control systems for research institutes and universities. For customized temperature-control systems, please contact official customer service (sales@sensefuture.com / rd@sensefuture.com).

Version Change Log

Version	Change description	Change date	Reviewed by
1.0.0	Initial version	2026/8/6	YL、WYR

Website & Store: www.sensefuture.com

Email: sales@sensefuture.com / rd@sensefuture.com

Tel: +86 755 888658289/18718688108

Address: Room 1308, Building A1, Sanhuan Technology
Building, Fenghuang Subdistrict, Guangming District,
Shenzhen, Gungdong, China



**Original Aspiration Shapes the Future;
Innovation Creates Value;
Sharing Brings People Together;**

**We look forward to win-win
cooperation with you!**