

Peltier-Type Temperature Control System for Circulating Fluids

NEW PRODUCTS
REVIEW

Thermo-con

 (water-cooled)
Precise temperature control of a heat source or process fluids is possible.

● Cooling capacity: **140 w, 320 w** added!

Renewal

Thermo-con **5** major advantages

(comparison with former HEC105W, 205W series)

1. Improved cooling capacity!

• Improved by 40% for HEC003, 20% for HEC001

2. Energy saving, Improved COP!

• Improved by 40% for HEC003, 10% for HEC001

3. Globally compatible power supply!

• Operable voltage range from 100 to 240 V AC

4. Safety standards

• UL (MET [NRTL]), CE, SEMI

5. Green procurement!

• RoHS compliant

The Peltier element can be used to control certain temperatures precisely.

No vibration, Environmentally friendly free of refrigerant

● Temperature stability:

$\pm 0.01^{\circ}\text{C}$ to 0.03°C

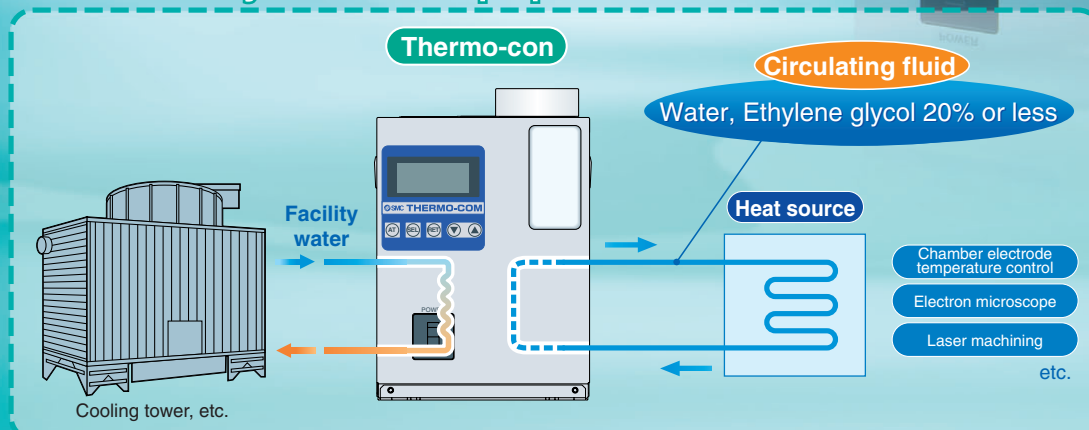
● Set temperature range:

10°C to 60°C



Water-cooled: Application for an environment with facility water equipment

W184 x H245 x D321



UL (MET_{US})
CE
SEMI
RoHS Directive

SMC

NPP-E07-9

Series **HEC-W**

● **Reduced noise and vibration due to no-moving-parts structure. (50 dB)**

● **Power supply: 100 to 240 V**

● **Options: With flow switch, NPT threads, or with level switch**

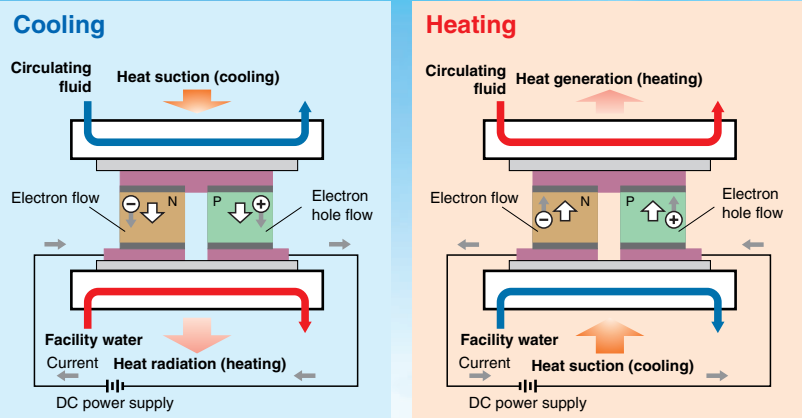


Principle of Peltier Element (Thermo-module)

The Peltier element is a plate-shape solid-state element with P- and N-type semiconductors alternatively arrayed. When direct current is supplied to the element, heat moves from one surface to another along with the element flow in the N-type semiconductor and the element hole in the P-type semiconductor. As a result of the heat wave, one surface of the element absorbs heat and decreases temperature, and the other surface heats up.

When the DC current is switched to the reverse direction, the heat move will also be reverse direction. Therefore, the Peltier element can achieve heating effect as well as cooling effect depending on the current direction.

It can achieve high-speed switching and precise temperature control.



Specifications (For details, please refer to our "Product Specifications" information.)

Model	HEC001-W5A	HEC001-W5B	HEC003-W5A	HEC003-W5B
Cooling method	Thermoelectric device (Thermo-module)			
Radiating method	Water-cooled			
Control method	Cooling/Heating automatic shift PID control			
Ambient temperature/humidity	10 to 35°C, 35 to 80% RH (no condensation)			
Circulating fluid system	Circulating fluid	Water, Ethylene glycol 20% or less		
	Set temperature range	10.0 to 60.0°C (no condensation)		
	Cooling capacity	140 W ^{Note 1)}		320 W ^{Note 1)}
	Heating capacity	410 W ^{Note 1)}		770 W ^{Note 1)}
	Temperature stability ^{Note 2)}	± 0.01 to 0.03°C		
	Pump capacity	Flow rate: 5 ℓ/min, Lift: 0.09 MPa, Water		
	Tank capacity	Approx. 1.2 ℓ		
	Port size	IN/OUT: Rc 3/8 Condensate: Rc 1/4 (with plug)		
Connecting material	PPE, PP glass 10%, Alumina ceramic, Carbon, EPDM, Stainless steel 303, Stainless steel 304, PE, PP, NBR			
Facility water system	Temperature range	10 to 35°C (no condensation)		
	Pressure range	Within 1 MPa		
	Required flow rate ^{Note 3)}	3 to 7 ℓ/min		
	Port size	IN/OUT: Rc 3/8		
Wetted material	Stainless steel 304			
Electrical system	Power supply	Single-phase, 100 to 240 V AC ±10%, 50/60 Hz		
	Overcurrent protector	10 A		
	Current consumption	3.5 A (100 V AC) to 1.5 A (240 V AC)		5.5 A (100 V AC) to 2.5 A (240 V AC)
	Communication	RS-485	RS-232C	RS-485
Mass	Approx. 12 kg		Approx. 13 kg	
Accessories	Power supply cable, Foot, Protective cover			
Safety standards	CE Marking, UL (NRTL), SEMI			

Note 1) Conditions: Circulating fluid temperature setting at 20 °C; Flow rate 5 ℓ/min; Facility water temperature at 20°C; Flow rate 5 ℓ/min; Circulating fluid (Water) with ambient temperature at 25°C

Note 2) This value is a stable load with no disturbance and cannot be achieved in some operating conditions.

Note 3) Using the product outside the proper flow-rate range may lower the performance and/or generate some noise.

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