COMPCOOLER

Personal Thermal Regulation Technology
To Keep Your Body Cool and Comfortable in Harsh Conditions!

On line Shopping

www.compcooler.shop

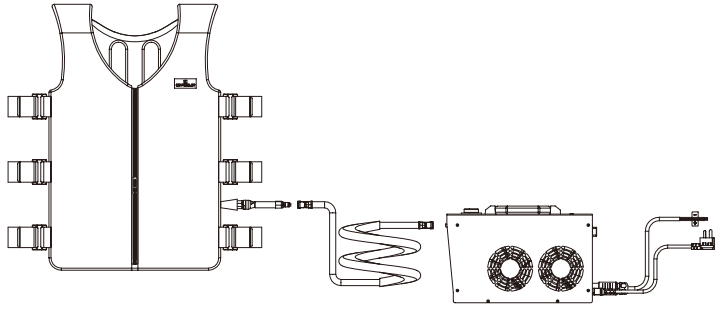
simonsun@compcooler.com

Designed in USA
Made in China

Portable Chiller Cooling Unit

Model: COMP-PCCS-24400S

Operation Manual



COMPCOOLER

PERSONAL THERMAL TECHNOLOGY

COMPCOOLER

Personal Thermal Technology

Personal Liquid Circulation Cooling System

- Liquid Cooling Garment
- ICE Water Cooling Unit
- Mini Chiller Cooling Unit

Reduce body core temperature and decrease the incidence of thermal stress while increasing comfort, safety, focus and endurance.

Contents

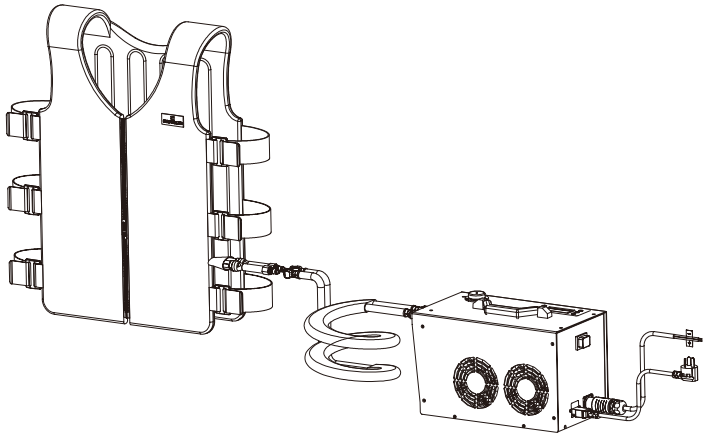
System Description

The Compcooler Portable Chiller Cooling Unit (PCCU) was designed for indoor and outdoor cooling applications.

PCCU uses a 24V DC rotary compressor refrigeration system to cool liquid in a reservoir. A pump circulates the cold liquid to where it's needed, such as a tubing-lined garment or cooling pad. Heat is absorbed by the liquid at the application site and returned back to the refrigeration unit to be cooled again. This process cotinues in a closed loop as long as the system is powered 'On'.

PCCU delivers 400W cooling capacity. It is powered by either a 110/220V AC wall plug or 24V DC. Temperature control is -5℃ to 30℃ (23℉ to 86℉) with an accuracy of +/-1℃ (2℉).

The system is programmable and will automatically operate at the user's preferred temperature set point.

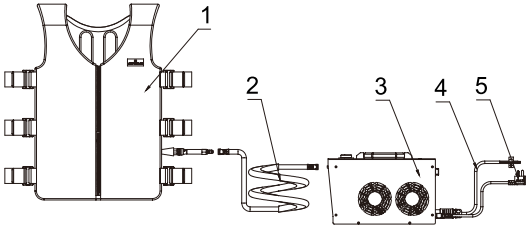


Component

Item	Part number	Description	Quantity
1	COMP-PCCU-24400S	Micro Refrigeration Chiller Unit 24V 400W	1
		AC Power Cord, 1.5m (5ft) US	1
		DC Power Cord, 1.5m (5ft.) Aero Connector	1
2	COMP-MLCV	Mesh Liquid Cooling Vest	1
3	COMP-ET2M-2F2F	Extension Tubing, 2m (6ft)	1
4		Operation Manual	1

Component Description

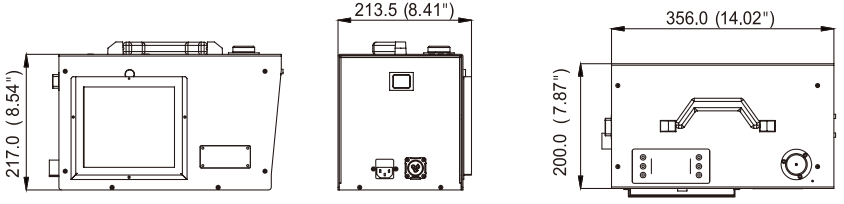
1. Liquid Cooling Vest,
   Part no. COMP-MLCV
2. Extension Tubing
   Part no. COMP-ET2M-2F2F
3. Chiller Unit
   Part no. COMP-PCCU-24400S
4. Power Cord AC
   Part no. COMP-PCAC-US
5. Power Cord DC
   Part no. COMP-PCDC-AF



Optional Components

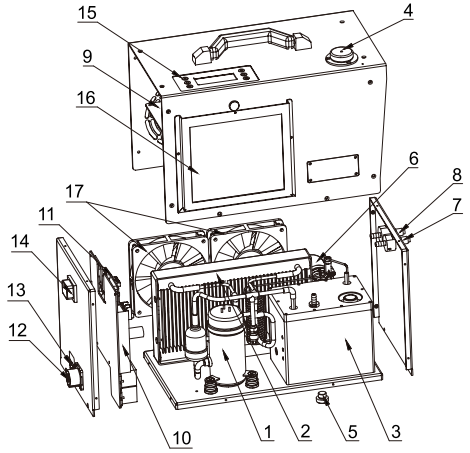
Item	Part Number	Description
1	COMP-PCHU-24400s	Portable Cooling & Heating Unit, 24V 400W
2	COMP-LCG-FB	Full body cooling garment
3	COMP-LCHP	Liquid Cooling Pad Single/Full/King Size

Dimensions, Chiller Unit

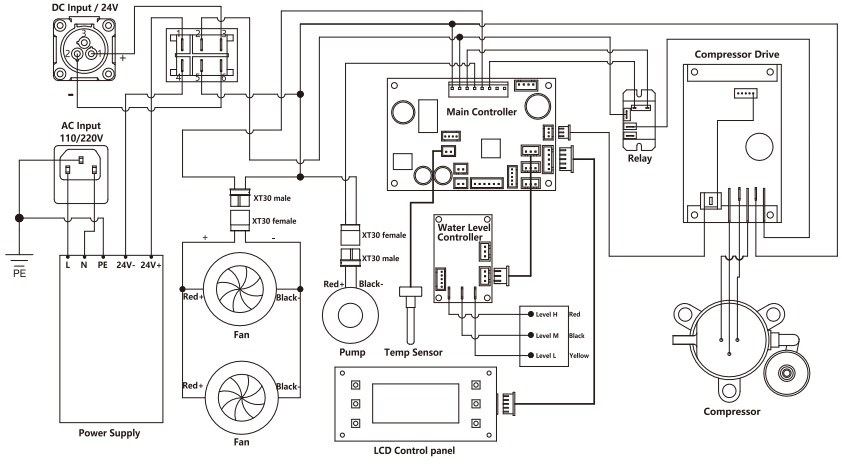


Chiller Unit Callouts

1. Micro refrigeration compressor
2. Condenser
3. Reservoir
4. Filling cap
5. Draining cap
6. Water pump
7. Water Inlet
8. Water outlet
9. Control board
10. Drive board
11. Liquid Level Board
12. DC Power connector
13. AC Power connector
14. Power switch
15. Front Panel
16. Air Filter
17. Condenser Fans



Chiller Control Diagram

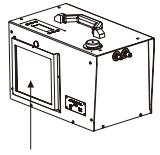


Technical Datasheet

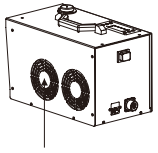
Cooling Capacity (Ambient Temp. 40℃)		W	400
Cooling Capacity (Ambient Temp. 104℉)		Btu	1364
Max Cooling Capacity		W	600
Power Supply		V AC	110 or 220
		V DC	24-28V
Operation Current		A	12
Max Current		A	15
Max Power Consumption		W	400
Refrigerant	Type		R134a
Temp Control		℃	-5 to 30
		℉	23-86
Coolant	Anti-freeze liquid		Yes
Rotary Compressor (Samsung)	Qty	PC	1
	Voltage	V DC	24
	Discharge	CC	2.4
	Speed	RPM	2000-6500
Fan	Qty	PC	2
	Voltage	V DC	24
	Air Flow	CFM	45
Pump	Voltage	V DC	24
	Water flow	L/Min	5
	Lift	M	5
Power Connector	Type	AC	3 pins
		DC	Aero Connector
Operation Ambient	Max	℃ (℉)	65 (150)
Storage Temp		℃ (℉)	-20 to 70 (-4 to 158)
Noise	Max	dBA	58
Color			White or Black
Dimension	L x W x H	MM	356x213x217
		Inch	14.02x8.41x8.54
Weight		KGS	8.2
		LBS	18

System Preparation

1. **Installation**; Install unit on a level surface and in a well-ventilated area. Allowing for proper ventilation with ensure maximum operating performance.



Fresh air inlet

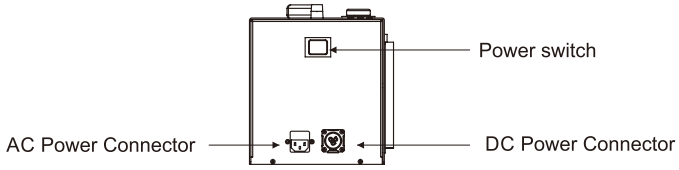


Hot air outlet

Maintain a minimum clearance of 250mm (10”) for the air inlet and outlet.

2. **Power Connection;** PCCU comes standard with two power options including a 110/220V AC cord or 24-28V DC cord with aero connector for connection to battery or vehicle power.

3. **Power Source Selection**; select the operating power mode using the AC / DC switch.



4. **Connect Extension Tubing**; PCCU comes standard with one set of extension tubes which tethers the PCCU to the device being cooled (ie: tubing-lined cooling garment, cooling pad or other tubing-lined device).

   The extension tubes have quick-release fittings on both ends. Simply press the button on the fitting to release it. Conversely, when connecting the fitting, an audible ’click’ ensures a good connection.

   While these fittings are designed to mate with Compcooler’s line of personal cooling devices and garments, they may be replaced by the User for compatibility with different garments or pads. If using a different garment or pad, simply replace the connection fittings on the extension tubes (garment end) with compatible fittings for said garment or pad.

5. **Priming the System**; If using the PCCU for the first time, a two-step priming process is required. Before priming, it is imperative to understand the types of liquid to be used with the PCCU.

System Preparation, Continued

The PCCU can be set to cool liquid above, or below, the freezing point of water. Accordingly, the type of liquid to be used depends on the programmable temperature setting of the PCCU. Please follow these guidelines for liquid preparation:

- Plain, clean water must be used for temperature settings above 1°C (33°).
- Anti-freeze liquid or Glycol/water mixture must be used for temperature settings below 1°C (33°).
- Deionized water may be used for isolation applications.

• DO NOT use salt water, caustic, corrosive, or flammable fluids as these will damage the PCCU and void the warranty.

Priming Steps:

Step 1:

a. Remove the filler cap from the top of the PCCU.
b. Using a funnel, fill the reservoir with liquid until full.
c. Connect the cooling garment or cooling pad to the PCCU using the extension tubes.
d. Connect the PCCU to a power source using the supplied cable.
e. Press the ‘Pump’ button on the control panel to start circulation and allow it to run for 1 minute. This allows the liquid to circulate in a closed loop between the PCCU reservoir and cooling garment or cooling pad.
f. Turn off the pump.

Step 2:

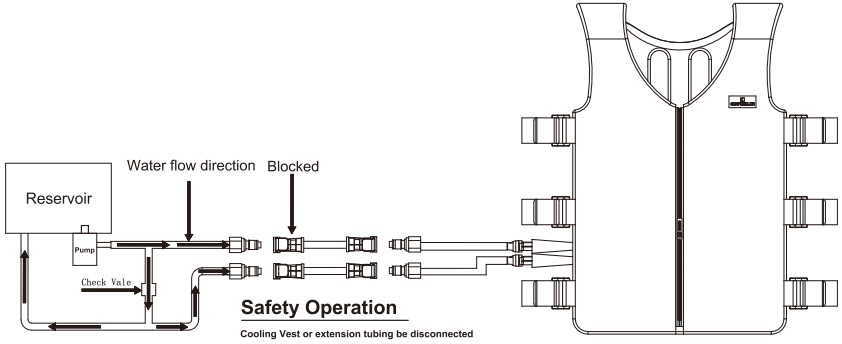
a. Using a funnel, fill the reservoir until full. This is required since some of the liquid has been used to fill the extension tubes, cooling garment and/or cooling pad during Step 1 of the priming process.
b. Replace the reservoir cap.

6. **Pre-Testing**; User may turn on the system and start refrigeration, no pump circulation, temperature will down in minutes.

System Operation

1. **Power Connection**: Connect the PCCU to a power source using the supplied AC or DC cable.
2. **Start Refrigeration**: Press the 'System ON/OFF' button on the control panel to start the PCCU. Reference diagram below.
3. **Temperature Setting**: Use the 'Up' and 'Down' buttons on the control panel to set the desired temperature for the circulation liquid. Reference diagram below.

4. **Start Pump**: Press the 'Pump' button on the control panel to start or stop circulation. Ensure the extension tubing is connected in a closed loop between the chiller and garment and/or pad before circulation begins. Make sure no kinks exist in the extension tubes. Otherwise, flow and cooling performance will be impeded. If flow is impeded or disconnected at the garment and/or pad, the liquid will be diverted and flow through a check valve whereby circulation will remain in a closed loop between the chiller and extension tubes only (reference diagram below).



Maintenance

1. **Cleaning**; Several parts of the PCCU may require cleaning as follows:
   a. Chiller Unit; The protective metal housing of the PCCU may be cleaned with a damp cloth and alcohol-based cleaning solution.
   b. Reservoir; Remove the cap from the underside of the PCCU and drain the liquid. If the liquid contains anti-freeze, contain and discard this liquid according to your local regulations. Replace the drain cap and remove the filler cap on the topside of the PCCU. Refill the reservoir with a solution of clean water, disinfectant and/or scale remover. Allow that to dwell for 10 minutes and drain again. Leave the drain cap off and allow the reservoir to dry completely. Replace the drain cap before next use.
   c. Condenser; To keep the PCCU at optimum cooling capacity, the condenser should be kept free of dust and dirt. To check if cleaning is necessary, open the side panel and remove the fans. If cleaning is required, use 50-100psi compressed air to clean the contamination.

Always use protective eyewear when cleaning with compressed air.

2. **Charging Refrigerant**; (not recommend for uncertified operator)

   If the cooling capacity has been decreased due to lack of refrigerant, the PCCU will need to be recharged by a licensed refrigeration specialist using 150g of R134a refrigerant. The refrigerant charging port is also found behind this side panel.

Storage

1. Disconnect the power cord.
2. Disconnect the extension tubing.
3. Empty and clean the reservoir by following the instructions under the Maintenance section 1.b.
4. Pack the unit for storage.
5. Restart: after long term storage the PCCU reservoir should be flushed using a solution of clean water and 5% detergent. Follow Priming instruction number 5 under the section for System Preparation and allow this solution to circulate for 10 minutes with a cooling garment or cooling pad connected. Then empty the detergent solution and refill with the proper operating liquid according to the same priming instructions.

Components Renewal

Open the side panel to replace the fans and pump if damaged. The refrigerant charging port is also found behind this side panel. Reference Chiller Unit Callouts on page 5 for component locations.

Fault Codes on Front Panel

Item	Code	Description
1	E1	Wrong Polarity or reverse connection from the power input
2	P1	No temp signal from sensor

Cautions

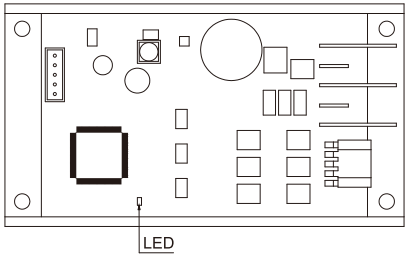
1. Ensure power source is 110V / 220V before connecting PCCU using AC cord.
2. Ensure battery power output is 20A / 400W before connecting PCCU using DC cord.
3. Repetitively cycling the PCCU within a short period of time using the 'System On/Off' button will adversely affect the refrigeration system and power consumption.
4. Do not block the air inlet and outlet. It may lessen cooling performance or worse yet, cause the compressor to overheat.
5. Ensure cooling garments or cooling pads are connected to the PCCU before starting the pump. Otherwise, leakage will occur.
6. Use anti-freeze liquid if temperature setting lower than 1°C.
7. Do not operate the PCCU close to a heat source or in ambient temperatures greater than 60℃ (140°F).
8. Do not operate the PCCU in wet or submerged conditions.
9. Stop operation and disconnect the power if high vibration or abnormal noise is observed.
10. Always use protective eyewear when cleaning the PCCU with compressed air.

Troubleshooting

Problem Description	Possible Cause	Solution
No cooling	Compressor locked, Overheat protection, Low Voltage	See below diagram
	No liquid circulation	Check if pump is turned on and cooling garment is connected, and no kinks or blockage exist.
	Power connection	Check connection of refrigeration unit to power source. Replace power cord if loose or damaged.
Low cooling capacity	Low heat exchange rate for evaporator	Check liquid level inside reservoir. Replenish if low.
	Low refrigerant level	Check if air from condenser air outlet is hot. Air should be hot for normal operation. Recharge refrigerant R134a if need.
	Low voltage	Check unit input voltage (not the voltage of power supply). Operation voltage should greater than 12V DC.
No liquid flow	Pump is Off	Turn pump on.
	Problem with quick fitting connection between unit and garment	Check that quick fitting connection on extension tubes are connected properly and not blocked or broken.
	Pump blocked	Disassemble the pump from chiller unit and clean if blocked.
Faulty temperature sensor	No feedback; reference 'P1' fault code on remote controller.	Check if sensor connection on the control board is loose or replace the sensor.

Compressor Issue:

Compressor malfunctions can be analyzed by counting the number of LED flashes.



LED Flash Count	Error Description
1	Compressor locked or overload
2	Disconnection of compressor line or an error of sensing current
3	Short-circuit on motor parts or over-current
4	Abnormal DC voltage
5	Overheating of the controller

Safety:

Warning: It is important to become thoroughly familiar with the operating characteristics of the Compcooler unit. It is the owner's responsibility to assure proper User training of the cooling system including component knowledge, system preparation, system operation and maintenance. Disregarding this warning can result in injury to the operator and severe mechanical damage to the unit.

Warranty:

Compcooler warrants this product to be free from defects in workmanship and materials, under normal residential use and conditions, for a period of one (1) year from the date of shipment. Shipping and handling fees are to be paid for by the customer. The manufacturer agrees, at its option during the warranty period, to repair any defect in material or workmanship or to furnish a repaired or refurbished product of equal value in exchange without charge (except for fees for shipping, handling, packing, return postage, and insurance which will be incurred by the customer). Such repair or replacement is subject to verification of the defect or malfunction and proof of purchase as confirmed by showing the model number on original dated sales receipt.

Certifications

Certifications

CE, UL, FDA, FCC, RoHS, PSE

Quality System

Customer service:
simonsun@compcooler.com