

Datasheet

Electric cooling/heating system for all vehicles



Introducing the latest Green technology in vehicle climate control ECO-ClimaTEC.

This advanced cooling and heating system utilizes patented Peltier technology consisting of 4 standard TCT-units from the renowned and trusted PowerPack-series. Using only environmental friendly materials and water as cooling liquid, the system operates as an clever and efficient cooling device and realizes a high efficient heating using waist energy of other components in the vehicle.

These multifunctional units are used at the heart of the system for cooling, heating or both applications providing a compact electrically powered system suitable for quick and simple integration in to any automotive vehicle platform.

A TCT-unit consists of 4 Peltier elements that have been flexibly embedded in each unit for increased cooling and heating performance, durability and reliability, a must for all cooling/heating applications in the automotive industry.

The system is designed to be compact, housing integrated pumps, fluid reservoirs and an internal electronic control-panel. It's a true plug and play solution that can be easily integrated in to almost any vehicle type.

The benefits and applications for OEM vehicle manufactures, specialist vehicle builders and converters to automotive engineers and fitters are endless. From electric vehicles, service, utility, domestic and industrial vehicles, sport, leisure and emergency service vehicles, Animals in transit, welfare and service vehicles the ECO-ClimaTEC is the next generation of vehicle climate control and vehicle Thermal Management system that include battery cooling loop, power controller, Motor, seat-cooling, component, spot-cooling, critical cargo-cooling, on board communication and PC-cooling, humidifier and sealed recalculated air systems, area and specific heating , controlled heat source and additional heating.

Overview ECO-ClimaTEC



- ✓ High performance
- ✓ Plug and play
- ✓ Environmental friendly
- ✓ Durability & Reliability
- ✓ No CFC's
- ✓ Shock proof
- ✓ Cooling and heating
- ✓ Freedom of heat expel
- ✓ Silent operating
- ✓ Accurate temperature control
- ✓ Flexible positioning
- ✓ Easy to install
- ✓ Low pressure
- ✓ Water/glycol cooling fluid
- ✓ Multi applicable for all vehicles

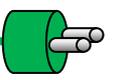
The BMCS is the basic module for this total thermal management system.

It operates on a low pressure water/glycol flow through the designed thermal exchange radiator and fan system so its free from the normal refrigerant gas currently in use in automotive systems making it easy to install, service and maintain providing a greener solution all round.

The BMCS module is provided with several components that safely monitor and automatically controlling the thermal properties of the system. The module is connected to the vehicle or auxiliary battery and to the designed vehicles heat/cold transfer system (combination of radiators / fan combination).

Other components can also be connected to the BMCS to control their temperature as well, and to enhance the cooling / heating performance for fully integrated systems.

A green solution for Cooling and Heating for electric vehicles



Standard Basic Module Car System

ECO-ClimaTEC module:	Control	Voltage
BMCS 4 x TCT 4-PP / FC4 / H12	Heating only	12 VDC
BMCS 4 x TCT 4-PP / FC4 / C12	Cooling only	12 VDC
BMCS 4 x TCT 4-PP / FC4 / HC12	Heating and Cooling	12 VDC
BMCS 4 x TCT 4-PP / FC4 / H 24	Heating only	24 VDC
BMCS 4 x TCT 4-PP / FC4 / C24	Cooling only	24 VDC
BMCS 4 x TCT 4-PP / FC4 / HC24	Heating and Cooling	24 VDC
More possibilities, see custom options	Customer configurations	12-700 VDC

Specifications

Type of TCT-units:	TCT 4-PP	
Number of TCT-units:	4	
Dimensions ECO-ClimaTEC	382 x 363 x 185 mm	15 x 14.3 x 7.3 in
Number of electric connections	1 x 4 pins & 1 x 5 pins	Phoenix Contacts
Tube connections:	G 3/8"	3/8" BSP Female
Tube connections options:	G 1/4" / G 3/8" / G 1/2"	Female: 1/4" BSP / 3/8" BSP / 1/2" BSP, Tubing Inside: Ø10mm, Ø16mm, Ø32mm
Weight	12 kg	26.4 lb
Max. Test pressure	2,0 bar	30 PSI
Liquid	Water / glycol	
Power Connection	2 x M10 lugs copper	
Reservoir volume	0,8 L per reservoir	800cc per reservoir
Electric fan connection	2x 2 pins	Phoenix Contacts
Noise level	<40 dBA	
Degree of protection	IP56	

Performance Standard version [Single Power Connection 2.4KW max]

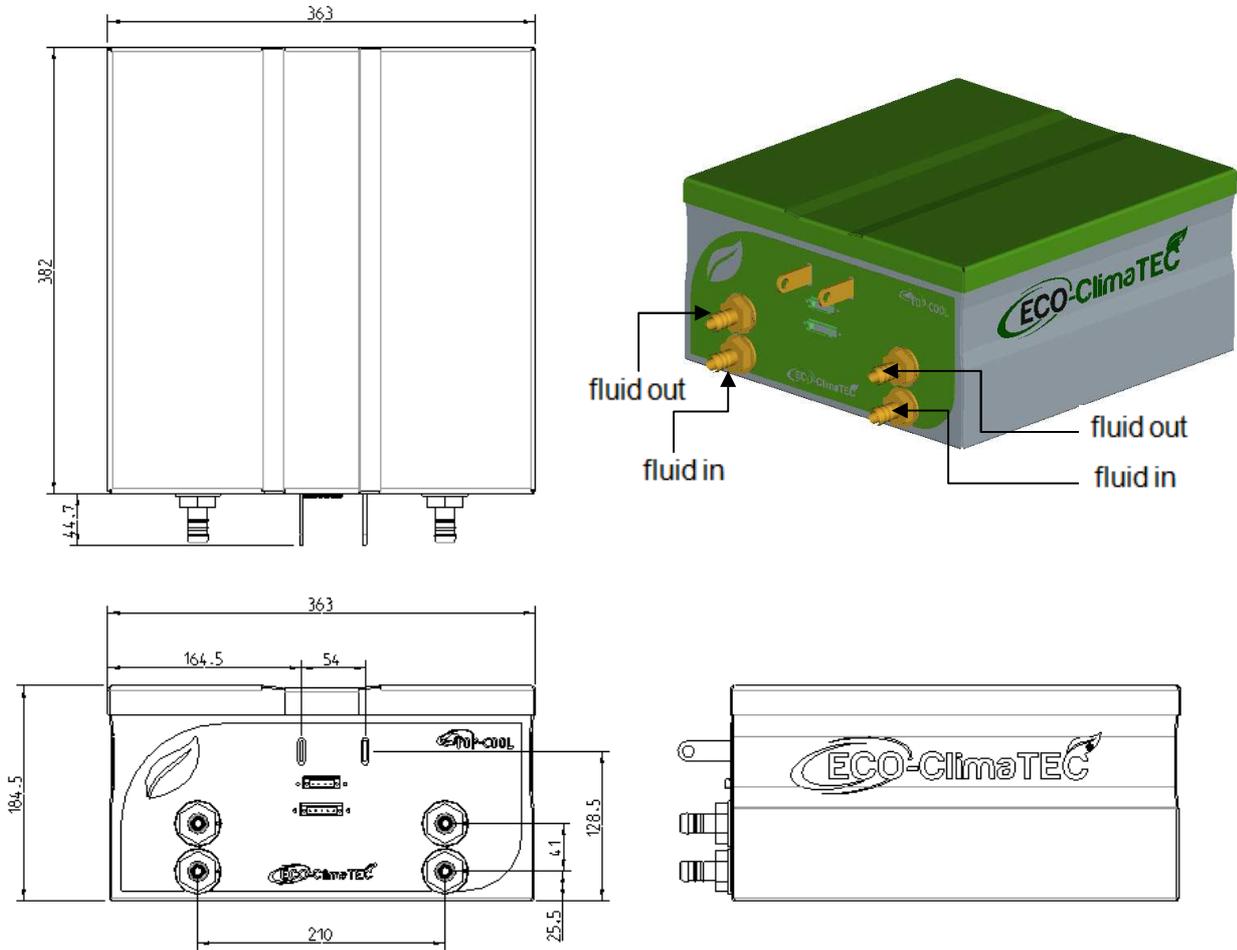
TCT-units	4 xTCT-4PP-15V10A		4 xTCT-4PP-24V13A		2 xTCT-4PP-15V10A 2 xTCT-4PP-24V13A	
Operating voltage	12 VDC		12 VDC		24 VDC	
Maximum Current on Power Connection	145 Amp		120 Amp		70 Amp	
Qwarm max Electric	1500 W	5120 BTU/hr	1200 W	4100 BTU/hr	1500 W	5120 BTU/hr
Qwarm max HPE (HeatPumpEffect)	1500 W - 2500 W	5120 BTU/hr- 8540 BTU/hr	1200W- 2500W	4100 BTU/hr- 8540 BTU/hr	1500 W - 2700 W	5120 BTU/hr- 9220 BTU/hr
Qcool	1000 W	3415 BTU/hr	1300W	4440 BTU/hr	1200 W	4100 BTU/hr

Performance Standard version [Double Power Connection 4.8KW max]

TCT-units	4 xTCT-4PP-15V15A		4 xTCT-4PP-24V13A	
Operating voltage	12 VDC		24 VDC	
Maximum Current	200 Amp		145 Amp	
Qwarm max Electric	2600W	8880 BTU/hr	5000 W	17000 BTU/hr
Qwarm max HPE (HeatPumpEffect)	2600 W - 3900 W	8880 BTU/hr- 13300 BTU/hr	5000 W - 6500 W	17000 BTU/hr- 22000 BTU/hr
Qcool	1300 W	4440 BTU/hr	1500 W	5120 BTU/hr

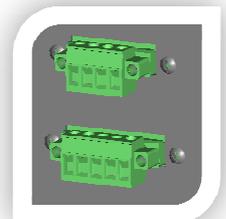
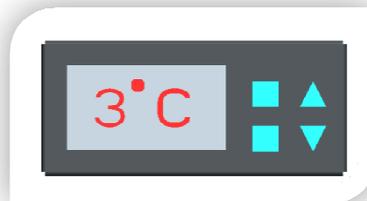


Dimensions:



Control options

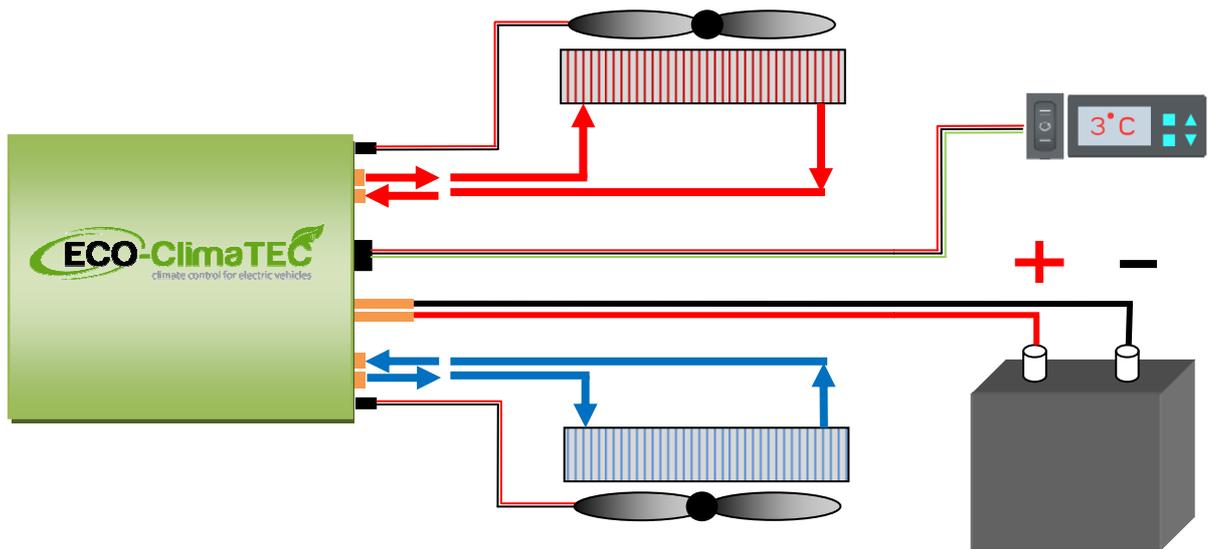
Manual control	Rocker switch	Manually Cold / Off / Warm
Temp range controller	Temp relays	Automatically Cold / Off / Warm [18°C - 23°C]
Temp control unit	Temp controller	Set point +/- 1°C
Integrated temp sensors	65°C	
Number of electric connections	2x2pins, 1x4pins, 1x6pins	



Installation:

The system is designed for its easy and quick installation and can be conducted by any competent mechanic, engineer. No special training, certifications or commissioning necessary. Connect the designed systems radiators to the BSCM, the Power Lugs to the battery and plug in the connectors for the fans and controller. The module is then simply filled with water or glycol (mixture).

Plug and play and drive away...



ECO-ClimaTEC
climate control for electric vehicles



Customer configurations

The system can be easily adapted to customer needs. See below for some possible options or configurations. Please feel free to contact our sales department for other desired, configured options and features.

Dimensions	
Outer dimensions (L x W x H) Containing 1 TCT 4PP +1 Pump / side	180 x 363 x 185 mm / 7.1 x 14.3 x 7.3 in
Outer dimensions (L x W x H) Containing 6 TCT 4PP +2 Pump / side	478 x 363 x 185 mm / 18.8 x 14.3 x 7.3 in
Outer dimensions (L x W x H) Containing 4 TCT 8PP +2 Pump / side	382 x 464 x 185 mm / 15 x 18.3 x 7.3 in

Custom features	
Number of TCT-units	1-6 units
Type of TCT-units, peltier	TCT PP8 (+101mm in width) [8 x Peltier]
Mass reduction possibilities	

Control options	
ECOplus mode	Passive/active cooling mode, max cooling COP
ECOpower mode	75% less electric power consumption, high cooling COP
Parking mode	Passive cooling, standby active cooling

Electric Connection	
PowerPoles	M10 Male thread
CAN-bus	CAN-comfort
HEM-control	Heat Exchanger Module temperature control
CEM-control	Cold Exchanger Module temperature control

Tubing connections	
Frontside Connection Nominal warm	FCNW
Backside Connection Nominal warm	BCNW
Frontside Connection Nominal cold	FCNC
Backside Connection Nominal cold	FCNW
Rightside Connection Nominal warm	RCNW
Leftside Connection Nominal cold	LCNC
Tube connector type options:	Female: 1/4 " BSP / 3/8" BSP / 1/2" BSP, Tubing Inside: Ø10mm, Ø16mm, Ø32mm
Fill port	Remote option possible



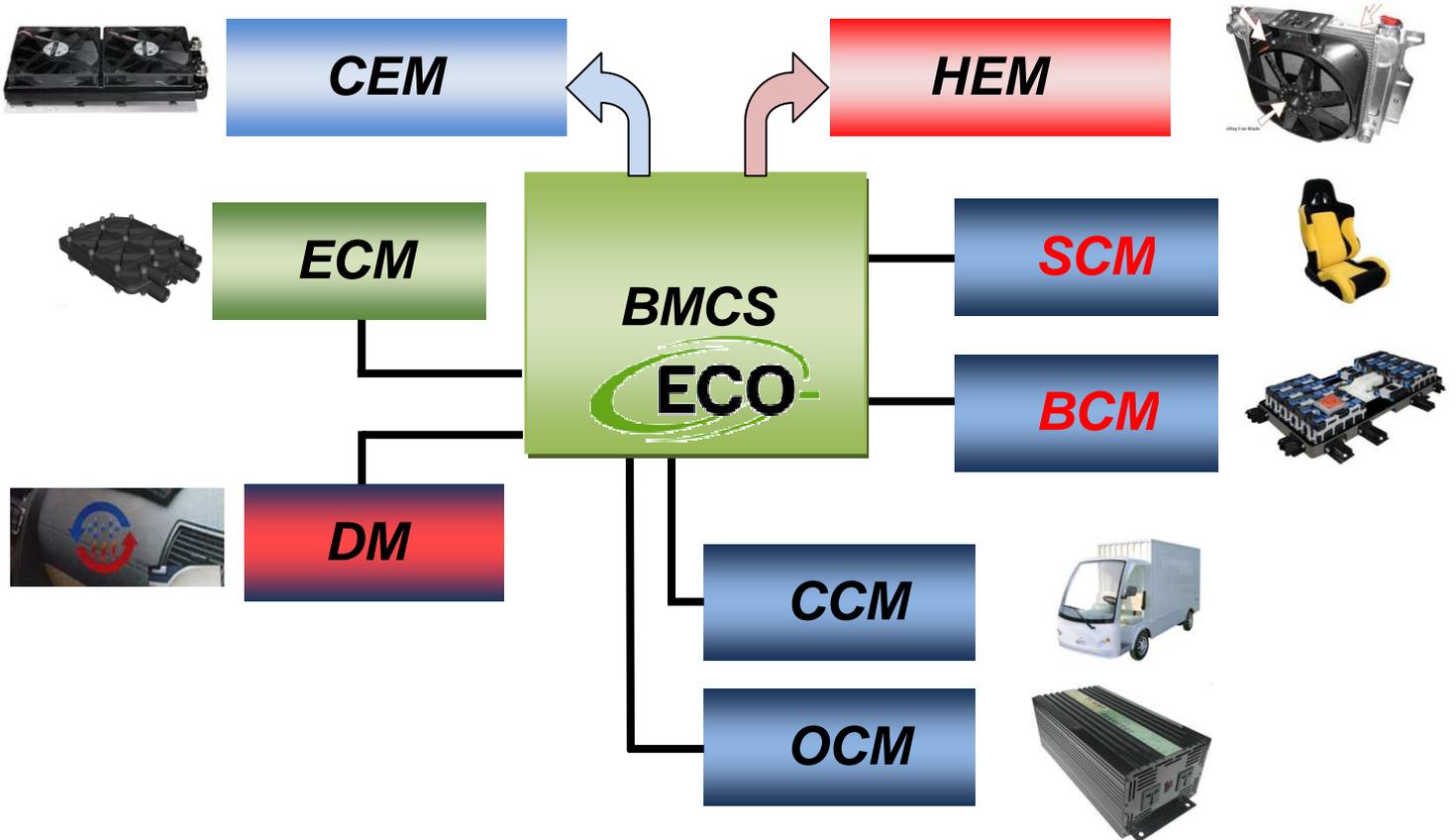
Thermal management system for electric vehicles with ECO-ClimaTEC system

Related systems

- BMCS *Basic Module Car System*
- HEM *Heat Exchange Module*
- CEM *Cold Exchange Module*

- ECM *Expandable Cooling Module*
- CCM *Cargo Cooling Module*
- OCM *Optional Cooling Module*

- SCM *Seat Climate Module*
- BCM *Battery Climate Module*
- DM *Dehumidifying Module*




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