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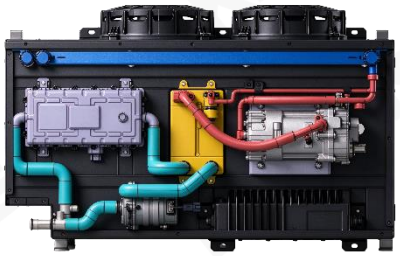
独立水冷式电池热管理机组
Independent Water-cooled Battery TMS Unit



产品介绍 Product Description

独立水冷式电池热管理机组是由压缩机、冷凝器风扇总成、chiller+EXV总成、电子水泵、水加热PTC及相关管路和支架等核心零件组成，可以实现商用车电池温度的智能调节。

The independent water-cooled battery TMS Unit is made up of key components like a compressor, condenser& fan assembly, chiller& EXV assembly, e water pump, water PTC, and related pipelines and brackets. It can intelligently regulate the temperature of the vehicle's batteries.

产品特征及优势 Feature and Benefits

- 集成式布置，空间占用小。
  Integrated layout, the TMS occupies less space.
- 系统简单、布置简明、运维便捷。
  Simple system , Compact layout , easy maintenance.
- 同时兼顾电池制冷及制热功能。
  Achieving both cooling and heating with a single unit.
- 运行模式加目标水温控制，高效节能，运行稳定。
  TMS controls the operating mode and water temperature, more energy-efficient and stable.
- 系列化开发，制冷量、制热量梯度设计，客户可按需选型。
  Serialized development, The cooling and heating capacities are set in gradients, customers can choose TMS according to actual needs.
- 接口标准化设计，通用性好，安装简便。
  Performance and interface compatible with major customer, and easy to install.
- 激光打标+独立标签，双重追溯以得到更好的追溯性。
  Parts use laser marking and the modules use separate labels, double tracing for better traceability.

产品应用 Product Application

水冷式电池热管理机组广泛应用于新能源商用车、储能电站及超充站等场景，机组电控单元通过CAN通讯与需要被调节温度的电池（如、商用车电池包、储能电池包等，）BMS进行需求信号交互，通过调节进入电池包的冷却液的温度从而快速实现被温控电池模组的降温或加热需求。

TMS are widely applied in scenarios such as new energy commercial vehicles, energy storage power stations, and ultra-fast charging stations. The powertrain control unit communicates via CAN with the BMS of the battery requiring temperature regulation (e.g., commercial vehicle battery packs, energy storage battery packs, etc.) to exchange demand signals. By adjusting the temperature of the coolant entering the battery pack, the TMS can rapidly meet the cooling or heating requirements of the battery modules whose temperature needs to be controlled.

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操作 Operation

基本原理 Basic Principle

水冷式电池热管理机组包含三套回路：冷却液回路、制冷剂回路和空气回路；其核心制冷原理是通过冷却液回路将电池包内部的热量搬运出来，然后在板式换热器处同制冷剂回路中的过冷态冷媒进行热交换，将冷却液的热量转移到制冷剂回路冷媒中，冷却液降温后再次循环进入电池包内吸热；最后由吸收了热量的冷媒在冷凝器处将热量散到空气中，散热后的冷媒再次进入压缩机进入下一个逆朗肯循环。制热原理是通过水加热PTC直接将冷却液加热，再进入电池包内加热电池，散热后的冷却液由水泵泵出再次进入PTC中进行下一个循环。

The water-cooled battery thermal management unit consists of three circuits: the coolant circuit, the refrigerant circuit, and the air circuit. The core cooling principle of the module is to transfer the heat inside the battery pack via the coolant. The coolant then undergoes heat exchange with the subcooled refrigerant in the refrigerant circuit at the plate heat exchanger, transferring the coolant's heat to the refrigerant in the refrigerant circuit. After cooling, the coolant circulates back into the battery pack to absorb heat again. Finally, the heat-absorbed refrigerant releases heat to the air at the condenser, and the cooled refrigerant returns to the compressor to enter the next reverse Rankine cycle. The heating principle involves using water-heated PTC to directly heat the coolant, which then enters the battery pack to warm the battery, after which it flows back into the PTC for the next cycle.

连接选项 Connection Options

根据客户选择定制连接系统。

Customized to customer choice of connection system.

包装选项 Packaging Options

可提供定制包装以满足任何需要，请联系KESENS技术部了解详情。

Custom packaging can be provided to meet any need, please contact KESENS Engineering for details.

技术参数 Functional Characteristics

产品名称 Product Name		8+12kW机组 8+12 kW TMS	10+24 kW机组 10+24 kW TMS	13+24kW机组 13+24 kW TMS	20+24kW机组 20+24 kW TMS
制冷量（KW） Cooling Capacity (KW)		8	10	13	20
制热量（KW） heating Capacity (KW)		12	24		
制冷剂牌号 refrigerant		R134a（or R1234yf）			
冷却液型号 coolant		50%水+50%乙二醇溶液 50%water+50% ethylene glycol			
供电电压 Power supply voltage	高压 High voltage	额定：600V（许用范围：400~750V） Rated: 600V (Allowable range: 400~750V)			
	低压 Low voltage	额定：24V（许用范围：18~32V） Rated: 24V (Allowable range: 18-32V)			
DCDC（W）		1500	3000		
通讯方式 Communication		CAN2.0			
防护等级 Protection Level		IP67			
控制逻辑 control logic		运行模式+目标水温 Operation Mode + Water Temperature			

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实现功能 Function Scope		电池加热+电池冷却 Battery heating + battery cooling			
电气接口 Electrical interface	TMS_HV	Amphenol PL182X-60-10			
	TMS_LV	AMP 174661-2			
	TMS端液位	AMP 282104-1			
	TMS端水泵强启	AMP 282087-1			
冷却液流量（L/min ） Coolant Flow (L/min)		30	50	60	60
噪音级别（dBA） Noise (dBA)		≤75	≤75	≤80	≤85
重量（kg） Weight（kg）		≤65	≤70	≤85	≤95
外形尺寸mm（L×W×H） Dimensions (mm) (L×W×H)		860×570×282	948×598×282	1150×598×282	1200×598×340

可根据客户需求定制产品，如有需求请联系我们。
Customized products available upon request. Contact us for details.

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