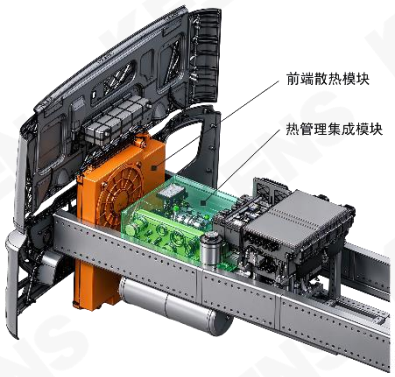
KESENS

多合一集成热管理机组

All-in-one Integrated Thermal Management Unit



产品介绍 Product Description

多合一集成热管理机组是由压缩机、前端散热模块、chiller+EXV总成、电子水泵、水加热PTC、电子水阀、水冷冷凝器及相关管路和支架等核心零件组成，可以实现商用车电池系统、空调系统、电驱动系统等多个系统温度的智能调节。

The all-in-one integrated thermal management unit consists of core components including compressor, front-end cooling module, chiller + EXV assembly, electronic water pump, water heating PTC, electronic water valve, water-cooled condenser, as well as associated pipelines and brackets. It enables intelligent temperature regulation for multiple systems of commercial vehicles, such as the battery system, air conditioning system and e-drive system.

产品特征及优势 Feature and Benefits

- 零部件集成度更高，布置紧凑，节省空间。
  High integration, Compact layout, space-saving.
- 集成化控制器，性能提升、运维便捷。
  Integrated ECU , enhanced performance, and easy maintenance.
- 功能集成度高，兼顾多系统（电池、空调、电驱等）的制冷、制热功能，系统功率可选型。
  Higher functional integration, supporting cooling and heating of multiple systems（battery system, air conditioning system and e-drive system ect）. And system power supports customized selection.
- CAN网通讯，电控智能联动，精准控温。
  CAN bus communication , intelligent linkage of electric control, precise temperature regulation.
- EMC性能优异，稳定可靠。
  Excellent EMC, reliable & stable.
- 余热回收，节能高效。
  Waste heat recovery, energy-efficient
- 核心部件激光打标+总成独立标签，双重追溯以得到更好的追溯性。
  Sub-components use laser marking and the modules use separate labels, double tracing for better traceability.

产品应用 Product Application

多合一集成热管理机组广泛应用于新能源商用车、工程车、船舶等场景，机组电控单元通过CAN通讯与VCU、BMS交互信号，智能切换制冷、制热、余热回收等模式，调节循环介质温度，实现电池、电机、电控等部件的降温、加热与恒温控制。

The all-in-one integrated thermal management unit is widely used in new energy commercial vehicles, construction vehicle, Electric boats and other scenarios. Its electronic control unit exchanges signals with VCU and BMS via CAN bus, intelligently switches between cooling, heating and waste heat recovery modes, adjusts the temperature of circulating medium, and realizes cooling, heating and constant temperature control for components such as batteries, motors and electronic controls.

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操作 Operation

基本原理 Basic Principle

多合一集成热管理机组采用二合一/三合一集成架构，深度整合电池热管理、整车空调、电驱系统热管理功能。设备通过智能切换制冷剂回路与冷却液回路的串并联状态、精准调节介质流量，统一统筹电池、空调、电驱系统的全域温控需求，实现多系统温度的动态匹配、精准调控与高效协同。

The all-in-one integrated thermal management unit adopts a 2-in-1 or 3-in-1 integrated architecture, which deeply integrates the thermal management functions of the battery system, AC system and e-drive system. By intelligently switching the series-parallel state of the refrigerant and coolant circuits and precisely adjusting the medium flow, the unit uniformly manages the full domain temperature control requirements of batteries, air conditioners and e-drive systems, realizing dynamic matching, accurate regulation and efficient coordination of multi-system temperatures.

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

项目 Item		二合一集成（初代）	二合一集成（下一代）	三合一集成
供电电压 Power supply voltage	高压 High voltage	400~750VDC	400~750VDC	500~900VDC
	低压 Low voltage	24V（18~32VDC）	24VDC（18~32VDC）	24VDC（18~32VDC）
系统性能 System Performance	制冷量 Cooling Capacity	乘客舱5KW+电池10KW Cabin:5kW+BAT:10kW	乘客舱5KW+电池10KW Cabin:5kW+BAT:10kW	乘客舱5KW+电池18KW Cabin:5kW+BAT:18kW
	加热量 heating Capacity	乘客舱5KW+电池24KW Cabin:5kW+BAT:10kW	乘客舱5KW+电池24KW Cabin:5kW+BAT:24kW	乘客舱7kW+电池24kW Cabin:7kW+BAT:24kW
	散热量-电机 Motor Heat Dissipation	/	/	30kW
流量 Coolant Flow（L/min）	电池（Battery）	50L/min @100kPa	50L/min @100kPa	60L/min@55kPa
	电驱&电控 E-drive&MCU	/	/	80L/min@75kPa
	空调暖风（AC）	>12L/min	>12L/min	>12L/min

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项目 Item	二合一集成（初代）	二合一集成（下一代）	三合一集成
功能范围 Function Scope	强制冷却	强制冷却+自然冷却	强制冷却+自然冷却+热泵系统+余热回收
压缩机工作温区 operating temperature range of compressor	全温区 All temperature zones	仅环温＞15℃ Ambient temperature＞15℃	仅环温＞15℃ Ambient temperature＞15℃
通讯方式 Communication	CAN	CAN	CAN
外形尺寸mm（L×W×H） Dimensions (mm) (L×W×H)	948×598×282	948×598×282	TMS：600*600*500 FCM：950*800*240

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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