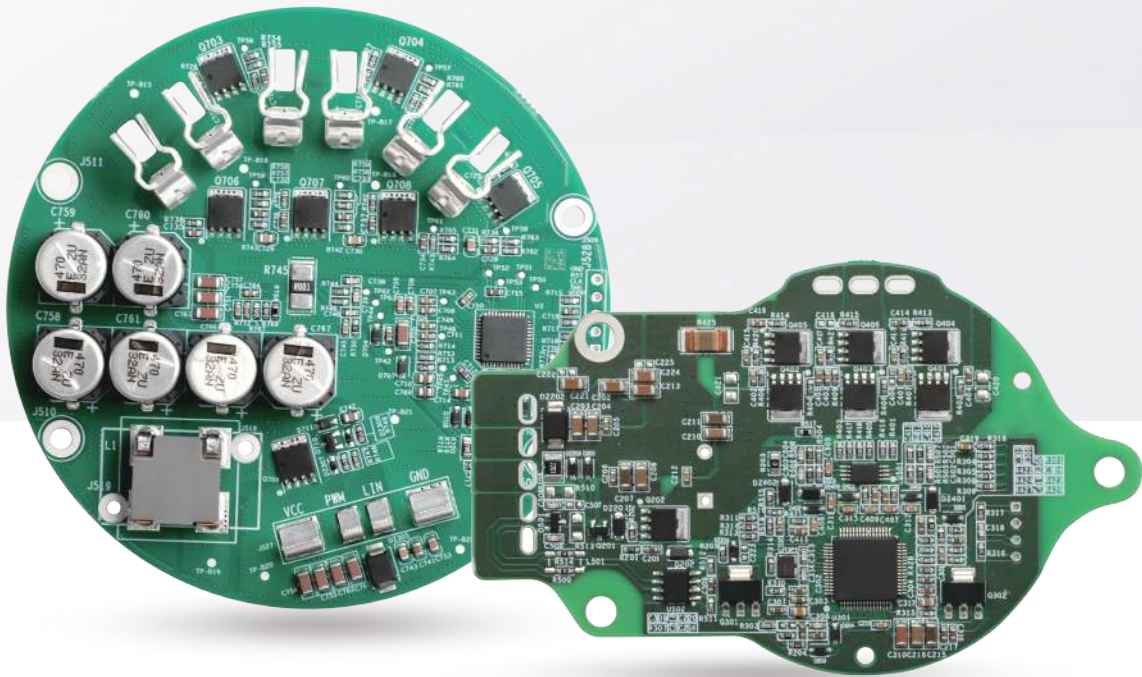


MOTOR CONTROLLER SELECTION GUIDE >>

 **Eunik®**
Stock code : 300304



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ABOUT YUNYI

Yunyi Electric (stock code: 300304)

An efficient new technology enterprise dedicated to the research and development, manufacturing, and sales of automotive core electronics.

Yunyi Electric has always been committed to creating beautiful travel through technology, and is a high-tech enterprise that integrates the research and development, manufacturing, and sales of core automotive electronics. Having 22 years of experience in supporting automotive core electronics OE, mastering core technologies, and having a global professional industrial base.

The main products include automotive alternators, rectifiers, and voltage regulators Semiconductor, nitrogen oxygen sensor, electronic water pump/fan controller Lambda sensor, precision injection molding parts, wiper system, etc.



23+

Industry
experience



6

Branch
offices



2600+

Number of
employees



3

R&D center



508+

Patents



120+

Serving the world
Country/Region



90000+

Factory area



700 million+

Equipment
investment

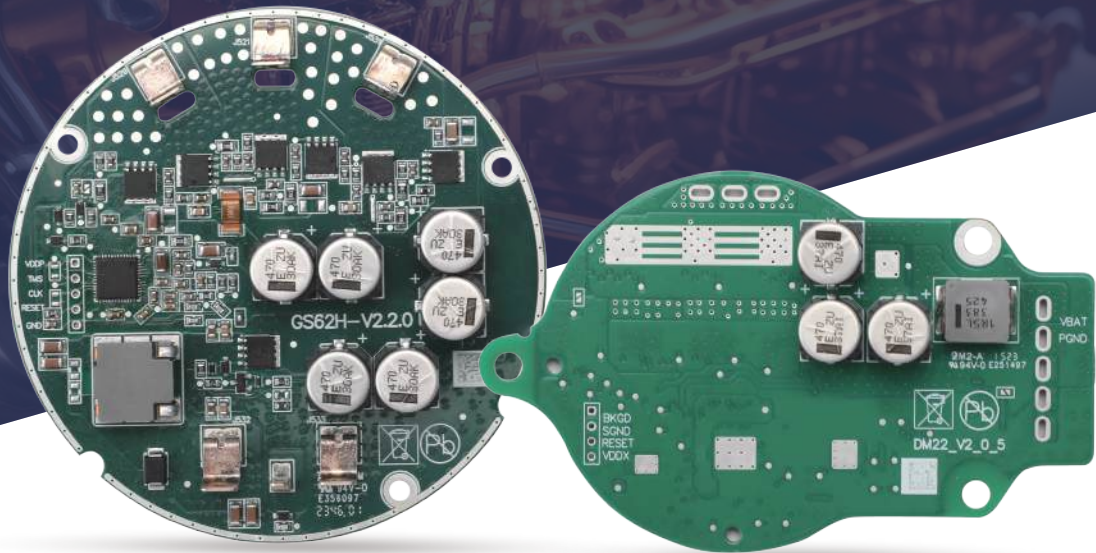




Fan Controller

MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
22010400		12V	300W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection
22010410		12V	200W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection

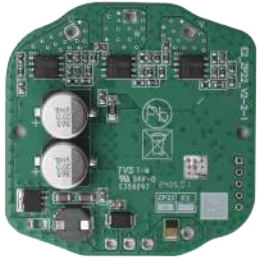
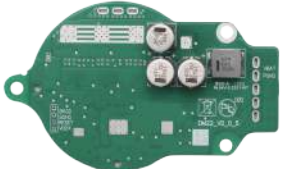
MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
22011201		24V	500W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output
22011301		24V	300W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output
25001401		24V	500W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output
25001401		24V	300W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output
25000100		12V	500W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection

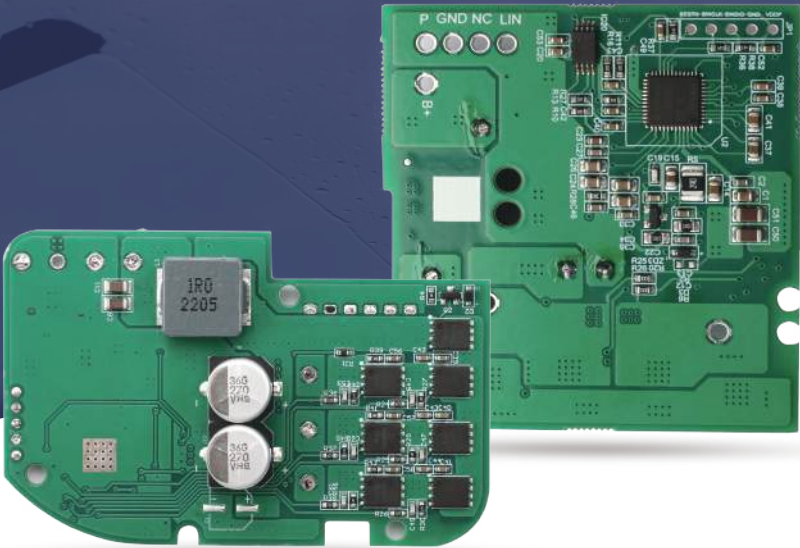


Pump Controller

MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
25100900		12V	60W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection
25102300		12V	400W	Windmill start Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection

MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
25102600		12V	40W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection
25102501		12V	100W	Reverse polarity protection Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection
25103100		12V	40W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection Dry rotation protection
25103401		12V	450W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection
25101301		12V	200W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection

MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
25101701		12V	200W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection
25200801		12V	200W	Overvoltage protection Undervoltage protection Blocking protection Over Temperature Protection Overcurrent protection fault output Dry rotation protection



Wiper Controller

MODEL NUMBER	PICTURE	RATED VOLTAGE	RATED POWER	FUNCTION
25400001		12V	150W	Brush driver Overvoltage protection Undervoltage protection Over temperature protection Oveload protection Overcurrent protection Blocking protection Snow load protection Self-locking Reverse polarity protection Angle correction Alternative park position Trajectory planning Failsafe mechanism for communication Fault output
25400002		12V	200W	Brush driver Overvoltage protection Undervoltage protection Over temperature protection Oveload protection Overcurrent protection Blocking protection Snow load protection Self-locking Reverse polarity protection Angle correction Alternative park position Trajectory planning Failsafe mechanism for communication Fault output
25400003		12V	200W	Brushless driver Low noise Long-life Overvoltage protection Undervoltage protection Over temperature protection Oveload protection Overcurrent protection Blocking protection Snow load protection Self-locking Reverse polarity protection Angle correction Alternative park position Trajectory planning Failsafe mechanism for communication Fault output

Laminated inverter brick



PRODUCT PROFILE

- ✂ The product that integrates all the functions required by a controller, such as control, drive, status detection, and fault detection, based on an integrated and platform-based solution for the electronic control system.

ADVANTAGES

- ✂ Compatible with 400V/800V medium and high voltage platforms, and compatible with mainstream power devices such as IGBT/SiC
- ✂ Highly integrated and unified design, compact structural layout, and the total volume is ≤ 4.85L
- ✂ SiC version efficiency ≥ 99.5%
- ✂ All power terminals adopt laser welding technology, and the system stray inductance is ≤15nH
- ✂ A self-developed module is adopted, with a steady-state current sharing deviation of less than 1% between parallel chips and a junction temperature difference of less than 5%.
- ✂ Stacked arrangement, and the film capacitor, EMC module, water channel radiator, current sensor and copper busbar all adopt an integrated integration scheme

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Input voltage range	280V~500V(400V) 370V~900V(800V)	Maximum mass	≤ 4.3kg
Maximum current	600Arms (400V) 430Arms(800V)	Functional safety	ASIL C/D
Maximum efficiency	≥99.5%	Average efficiency	≥98.7%
Maximum volume	≤ 4.85L	Maximum switching frequency	≥ 15kHz
Cooling conditions	8~12L/min	Ambient temperature	-40°C ~85°C

Dual-electronic control inverter brick



PRODUCT PROFILE

- ✂ The product that integrates all the functions required by a controller, such as control, 2-channel driving, status detection, and fault detection, based on an integrated and platform-based solution for the electronic control system.

ADVANTAGES

- ✂ Compatible with 400V/800V medium and high voltage platforms, and compatible with mainstream power devices such as IGBT/SiC.
- ✂ Highly integrated and integrated design with a compact structural layout, the total volume is ≤ 2.8L.
- ✂ The efficiency of the SiC version is ≥ 99.5%.
- ✂ Power terminals all adopt laser welding technology, and the system stray inductance is ≤ 15nH.
- ✂ Self-developed modules are used, with a steady-state current sharing deviation of < 1% between parallel chips and a junction temperature difference of < 5%.
- ✂ The modules are arranged with a stacked common water channel, and the film capacitors are stacked and integrated; the film capacitors and water channel radiators adopt an integrated integration scheme.

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Input voltage range	200V~500V(400V) 310V~900V(800V)	Maximum mass	≤ 4.78kg
Maximum power	2*180kW(400V) 2*180kW(800V)	Functional safety	ASIL C/D
Maximum efficiency	≥99.5%	Average efficiency	≥98.7%
Maximum volume	≤ 2.8L	Maximum switching frequency	≥ 15kHz
Cooling conditions	8~12L/min	Ambient temperature	-40°C ~85°C

Five-in-one power module



PRODUCT PROFILE

- ✂ Highly integrated five-in-one: VCU, MCU, DCDC1, DCDC2, and PDU, compatible with CAN2.0/CANFD;
- ✂ The structure adopts an upper and lower compartment layout to reduce operational crosstalk between modules and achieve good EMC performance;
- ✂ Three-dimensional water channel design, with shared cooling water channels among power modules, reducing heat loss and improving conversion efficiency;
- ✂ The IGBT adopts PIN-FIN cooling to reduce module thermal resistance and improve efficiency.

ADVANTAGES

- ✂ High integration level: Highly integrates the functions of VCU, MCU, DCDC1, DCDC2 and PDU
- ✂ Good EMC performance: Arranged in upper and lower compartments
- ✂ Good heat dissipation performance: Innovative three-dimensional water channel design, IGBT adopts PIN-FIN cooling
- ✂ High efficiency (Max): DCDC1≥95% DCDC2≥95% MCU≥98%
- ✂ Modular design: Different functional modules can be combined arbitrarily

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Rated Voltage (V)	350 (240~400)	DCDC2 Maximum Efficiency	≥95%
DCDC1 Output Power (kW)	3	MCU Rated Output Power	30kVA
DCDC1 Output Voltage (V)	16~32	MCU Maximum Controller Efficiency	≥98%
DCDC1 Maximum Efficiency	≥95%	MCU Peak Output Power	60kVA
DCDC2 Output Power (kW)	2	Cooling Method	liquid cooling
DCDC2 Output Voltage (V)	6~18	Mass (kg)/Dimensions (mm)	20/453*317*190

Three-in-one power module



PRODUCT PROFILE

- ✂ It integrates three core functions: OBC, DCAC, and DCDC, and is compatible with 400V and 800V platforms;
- ✂ It adopts the third-generation wide-bandgap semiconductor SiC devices and a double-layer planar heat dissipation structure design. The average efficiency of OBC can reach 96%, and the average efficiency of DCDC is close to 94%. Both its size and efficiency have reached the advanced level in the industry;
- ✂ It has a wide output voltage range and can maintain power output within a wide range.

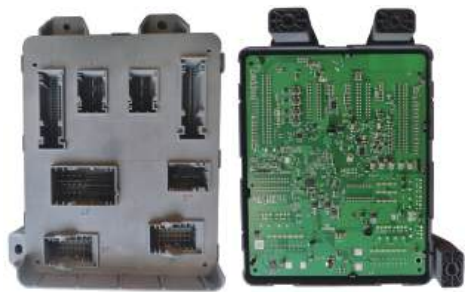
ADVANTAGES

- ✂ Small size and high power density: 3.12 kW/L
- ✂ Good heat dissipation performance: adopts SiC devices and three-dimensional water channel design
- ✂ High efficiency (Max): OBC≥96%, DCDC≥95%, DCAC≥96%
- ✂ Modular design with strong expandability: supports functional expansion such as PDU, VCU, MCU, etc.

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
HVAC Input Voltage (V)	85~265	DCDC Output Voltage (V)	9~16
HVDC Output Voltage (V)	200~480	DCAC Rated Output Power (kVA)	6
OBC Rated Output Power (kW)	6.6	DCAC Maximum Efficiency	≥96%
OBC Maximum Efficiency	≥96%	Cooling Method	liquid cooling
DCDC Rated Output Power (kW)	3	Mass (kg)	5.5
DCDC Maximum Efficiency	≥95%	Dimensions (mm)	270*190*60

Body Domain Controller



PRODUCT PROFILE

- ✔ A multi-in-one domain controller integrating functions such as BCM, PEPS, GW, TPMS, TMS, and VCU;
- ✔ Developed based on the principles of hardware modularization and software platformization.
- ✔ It realizes the integration of functions and components, centrally controls and uniformly manages various body electrical appliances/actuators;
- ✔ Unifies the analysis and processing of collected information; reasonably and effectively allocates system resources;

ADVANTAGES

- ✔ Platform-based design: Circuit modularization and software platformization enable quick adaptation to the needs of different customers;
- ✔ Low cost: Simplifying the vehicle network topology and reducing the weight of wire harnesses give the vehicle a more cost-effective advantage.
- ✔ Rich resources: Supports various input types such as analog, digital, and frequency inputs;
- ✔ supports various output types such as high-side, low-side, half-bridge, and full-bridge drives.

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Operating voltage	9V~16V	H-bridge output	22
Quiescent current	< 5mA	CAN/CANFD	12
LF antenna	6	LIN	9
Analog input	67	Information security	The main chip is equipped with HSM to meet information security requirements
Digital input	85	Functional safety	ASIL B
High-side output	49	OTA	External 256M Flash supports FOTA Master and AB partitions
Low-side output	32		

Small motor controller



PRODUCT PROFILE

- ✔ Using a new-generation domestic MCU, it integrates power supply, pre-driver, and operational amplifier modules, featuring high integration, compact size, and reliable performance.
- ✔ Equipped with three-phase drive, current collection, anti-reverse connection, filtering and other module circuits, ensuring stability and reliability.
- ✔ It implements sensorless FOC algorithm based on single-resistor sampling, and also supports sensor-based FOC algorithm.

ADVANTAGES

- ✔ Platform-based design: applicable to water pump motors, oil pump motors, wiper motors, etc. with a power range of 60-500W
- ✔ High control precision: speed control precision of $\pm 10\text{rpm}$
- ✔ Fully localized production: all components are domestically made, 100% localized

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Working voltage	9V~16V	Control method	Sensorless/Sensor
Rated power	60W~500W	Standby current	FOC35 μ A
Rotation speed	300rpm~5400rpm	Cooling method	Conduction + Forced Convection
Rotation speed accuracy	+10rpm	Operating temperature	-40°C~+125°C

ERDU90 motor controller



PRODUCT PROFILE

- ✔ The third-generation solution is built based on the ERDU series controller products of the new energy commercial vehicle motor controller platform, and is suitable for 3.5T-4.5T new energy vehicle models.
- ✔ Wide product coverage: It can meet the needs of 3.5T micro-trucks, pickup trucks, 4.5T light trucks and other vehicle models.
- ✔ High power density: It can be integrally designed with the motor, featuring small size and light weight.
- ✔ High EMC level: It meets Class 3 when loaded, with excellent anti-interference performance.

ADVANTAGES

- ✔ Strong compatibility: Compatible with 12V/24V solutions, with power expandable to 110kw compressor
- ✔ Safe and reliable: Developed based on mass application platforms
- ✔ High localization: Fully localized design except for the MCU chip

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Input voltage range	240V~480V	Maximum volume	3L
Rated voltage	350V	Cooling conditions	10L/min
Peak power	90kW	Cooling method	liquid cooling
EMC level	Class 3	Maximum mass	4.85kg
Maximum efficiency	98%		

PDCU 120 All-in-One Controller Assembly



PRODUCT PROFILE

- ✔ The second-generation all-in-one controller specially developed based on the requirements of 4.5T-7.5T new energy commercial light truck models for high efficiency, high integration, and high compatibility of motor controllers.
- ✔ High efficiency: maximum efficiency $\geq 99\%$
- ✔ Highly integrated: integrates VCU, MCU, OBC, DCAC, DCDC, PDU, EHPS, CMP
- ✔ Scalability: functional modules (such as BMS, etc.) can be expanded with the same size and interface

ADVANTAGES

- ✔ Strong compatibility: low-voltage 12V/24V, high-voltage 400/800V solutions, compatible with the same size and same interface
- ✔ Modular design: universal platform design with rich and optional functions; different functions can be selected according to different needs (such as extended BMS, etc.)
- ✔ High efficiency and safety: maximum efficiency $\geq 99\%$, interfaces adopt quick-plug solutions, making the loading process safe and efficient

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Input voltage range	360~750V	OBC rated power	6.6kW
Cooling method	Liquid cooling ($\geq 16\text{L/min}$)	DCDC rated power	4.5kW
EMC level	Class 3	DCAC rated power	6kVA
Maximum mass	26.5kg	Small motor peak power	8.3kW
MCU peak power	120kw	VCU	3 channels of CAN communication, 6 channels of PWM drive, 12 channels of signalsampling
MCU maximum efficiency	99%		

EVCC



PRODUCT PROFILE

- ❑ EVCC converts the national standard CAN communication protocol to the overseas standard PLC communication through its protocol conversion function, achieving cross-regional charging compatibility.
- ❑ It coordinates data interaction between charging piles and BMS to ensure accurate matching of charging parameters.
- ❑ It integrates multiple safety protection mechanisms and can actively cut off the charging link in case of abnormalities.

ADVANTAGES

- ❑ Supports remote upgrade, cloud monitoring, and allows users to remotely control the charging process
- ❑ Dual CAN design, customizable development of network management functions
- ❑ Supports customized development of diagnostic functions
- ❑ Supports customized development of flashing functions

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Chinese Standard	GB/T 27930	Quiescent Current (uA)	< 150
International Standard	DIN 70121 ISO 15118 IEC 61851	Protection Class	IP67
Operating Voltage Range (VDC)	9~16	Weight (kg)	0.4
Operating Temperature (°C)	-40~85	Dimensions (L*W*H) (mm)	152*142*31

Silicon Carbide Plastic-Encapsulated SSC Module



PRODUCT PROFILE

- ❑ The first-generation plastic-encapsulated power module developed for China Changan Electronic and Electrical Division.
- ❑ Low ETot, Qg, and Crss
- ❑ Direct cooling base plate, patent-protected design, industry-leading
- ❑ Adopting advanced technologies such as Si3N4 AMB, sintered silver, and Clip
- ❑ Applied in hybrid and electric vehicle (H)EV drive systems
- ❑ Suitable for 800V platform / 180-250kW system

ADVANTAGES

- ❑ It features high reliability and high efficiency.
- ❑ Low inductance: inductance is 7nH
- ❑ Low RDS(on): 2.6mΩ at 25, 4.9mΩ at 175

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Current output capability	450Arms@800VDC	Gate-source voltage withstand	1200V
Drain-source on-resistance(RDSon)	2.6mΩ	Inductance	7nH
Internal gate resistance	1.46Ω	Thermal resistance	0.123K/W
Maximum junction temperature	175°C	Reliability requirements	AQG324
Maximum power	250kW	Weight (g)	670

IGBT DC6 potting power module



PRODUCT PROFILE

- ❑ Directly cool the Pinfin base plate and optimize the Pinfin layout to improve the heat dissipation performance of the module
- ❑ The Pin uses an injection molding scheme, which doubles the vibration performance of the module compared to industry standards, meeting complex installation conditions
- ❑ Applied to hybrid and electric vehicle (H)EV drive systems
- ❑ By changing the wafer, it meets the 400V/50~120kW requirements

ADVANTAGES

- ❑ The signal pins are injection-molded into the housing, and the module's anti-vibration capability is twice the industry standard.
- ❑ An elliptical Pinfin direct water cooling system is adopted, combined with a Si3N4 substrate, which improves the heat dissipation capability by more than 30%.

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Input voltage range	200V~480V(400V)	Withstand voltage	750V
Maximum power	120KW(400V)	Inductance	15nH
Cooling conditions	8~12L/min	Current output capability	≥500Arms@350V,10K,10L/min, 65°C water temperature
Maximum mass	≤0.75kg	Locked-rotor capability	≥500A@450V, 2K, 10L/min, water temperature 65°C
Maximum junction temperature	175°C		

Third-generation digital key



PRODUCT PROFILE

- ❑ Phone keyless unlocking
- ❑ Cloud-based key handover to designated driver/valet
- ❑ Automatic billing and deduction
- ❑ Precise indoor navigation
- ❑ Bluetooth + UWB dual ranging

ADVANTAGES

- ❑ Self-developed algorithm antenna switching system, requiring only 2 UWB modules
- ❑ Adopting domestically developed M4F and M0 processor chips
- ❑ Hardware supports CCC protocol
- ❑ Can independently develop mobile applications (IOS/Android)

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Integration level	Three-in-one	Frequency	Near Field Communication (NFC)
Operating voltage range	12V		Bluetooth Low Energy (BLE)
Operating current	17mA~58mA		Ultra-Wideband Channel 5 (6.5GHz)
Host interface	CAN, UART		and 9 (8GHz)
Dimensions (XYZ)	70mm*40mm*18mm		Global Positioning System (GPS)
Weight	46.35g		

Fusion of Radio Frequency Technology - Blind Spot Detection System



PRODUCT PROFILE

- ✔ Communication without wire harness
- ✔ Strong anti-interference
- ✔ High sensitivity
- ✔ High precision

ADVANTAGES

- ✔ Self-developed algorithm recognition system
- ✔ Using domestically-produced self-developed M4F and M0 processor chips
- ✔ Adjustable sensing distance

SPECIFICATION

ITEM	PARAMETER	ITEM	PARAMETER
Integration level	2-in-1	Main features	Ultra-wideband
Operating voltage range	12V		·IEEE 802.15.4-2020 UWB IEEE 802.15.4z-2020 (BPRF mode).
Frequency	Ultra-wideband channels 5 (6.5GHz) and 9 (8GHz)Millimeter wave radar sensing (77GHz)		·Secure time-of-flight measurement and payload encryption
Dimensions (X*Y*Z)	54mmx35mmx12.5mm		·AES 256.
Weight	45g		·Data rates of 850kbps, 6.8Mbps.
			·Millimeter wave radar sensing
			·Supports FCC, SRRC certification
			·Supports 77GHz frequency
			·Maximum detection distance of 70 meters

PM2.5 Sensor



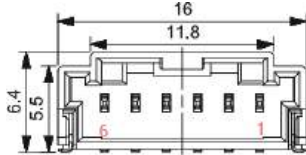
MAIN FEATURES

- ✔ Accurate measurement based on the principle of laser scattering
- ✔ Real-time response and support for continuous acquisition
- ✔ Minimum resolvable particle size of 0.3μm
- ✔ Electromagnetic shielding design with strong anti-interference performance

WORKING PRINCIPLE

Air is sampled through the internal negative pressure generated by a fan. When particles in the sampled gas pass through a light source (laser), a light scattering phenomenon occurs. The scattered light is converted into an electrical signal (pulse) by a photoelectric converter. The larger the particle diameter, the greater the amplitude of the output pulse signal. The signal amplitude is compared with a preset threshold to calculate the number of particles with different diameters, and then the mass concentration value is obtained through calibration and fitting using a professional algorithm.

TECHNICAL INDICATORS		ENVIRONMENTAL CONDITIONS	
Detection particle size range	>0.3μm	Working conditions	Temperature range with guaranteed accuracy-20°C~+50°C
Measurement range	0~1000μg/m³	operating current	Working mode: ≤220mA, @12V
Resolution	1μg/m³	PIN DEFINITION	
Detection accuracy	≤100μg/m³: ±20μg/m³>100μg/m³: ±20%		
Refresh time	≤1s	1	NC
Response time	≤30s	2	NC
Communication method	LIN	3	NC
Storage conditions	-40~+85°C	4	GND
Supply voltage	9~16VDC, standard voltage 12V	5	LIN
		6	BAT



Male connector: MOLEX 5023510600

Female connector: MOLEX 5023520600

Water ion generator



PRODUCT PROFILE

The principle is to use a water ion driver and a generating device to gather water molecules in the air, release high-voltage electricity to the gathered water molecules to generate water ions, and at the same time release negative ions to combine with them.

ADVANTAGES

- ✔ It contains a large number of water ions and negative oxygen ions, which fully come into contact with particles, bacteria, viruses, mold, etc., achieving the effects of sterilization,disinfection, bacteriostasis, deodorization, purification, and preservation.
- ✔ It itself contains a large number of hydroxyl free radicals, water ions, and negative ions, which fully contact with bacteria, viruses, mold, etc., take away the hydrogen ions they contain, cause the bacteria, viruses, and mold that contain protein components to lose water and thus lose their activity, achieving the effects of sterilization, disinfection, mold inhibition, deodorization, purification, and preservation.

SPECIFICATION

INPUT VOLTAGE	INPUT POWER	OUTPUT VOLTAGE 1	OUTPUT VOLTAGE 2	OUTPUT VOLTAGE 3
DC12V±2V	< 5W	-5000±500V	3000±500V	0.4±0.2V /1.8±0.2A
Red +, Black -, Yellow switch	/	/	/	Red +, Black -
The male connector connects to an external power source.	/	/	/	The female connector is used to supply power to the 12V fan, and the fan is optional.

Speed control module



PARAMETERS OF THE AUTOMOTIVE AIR CONDITIONING BLOWER SPEED CONTROL MODULE:

- ✔ Operating voltage range: 9-16V
- ✔ Input signal voltage range: 0~12V
- ✔ Maximum operating current: 30A
- ✔ Operating temperature range: -40-85 °C