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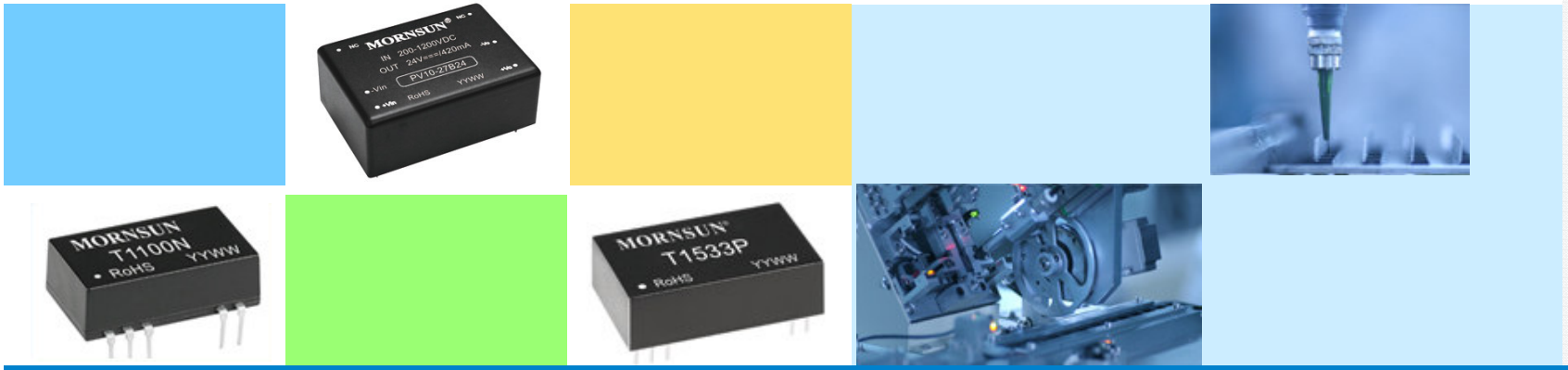

Automotive Electronics and Charging Spot Application

Background

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With the increasing of consumption of non-renewable energy like petroleum, energy crisis is affecting the development of global economy.

Vehicle exhaust and other toxic gases are bring bad effect to the world wide environment.

Countries around the world are investing a lot to research new energy vehicles in order to reduce energy consumption and improve natural environment.

Energy vehicles have a sales volume up to **500 thousand.**

Sales volume of new energy vehicles will reach a number of **1.7 million** in 2020.

Content

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1 Automotive electronics industry applications

1. Introduction of automotive electronics industry

2. Automotive electronics power solutions

2 Automotive charging spot industry applications

1. Basic knowledge of charging pile
2. charging spot power solutions

Basic structure of automotive electronics

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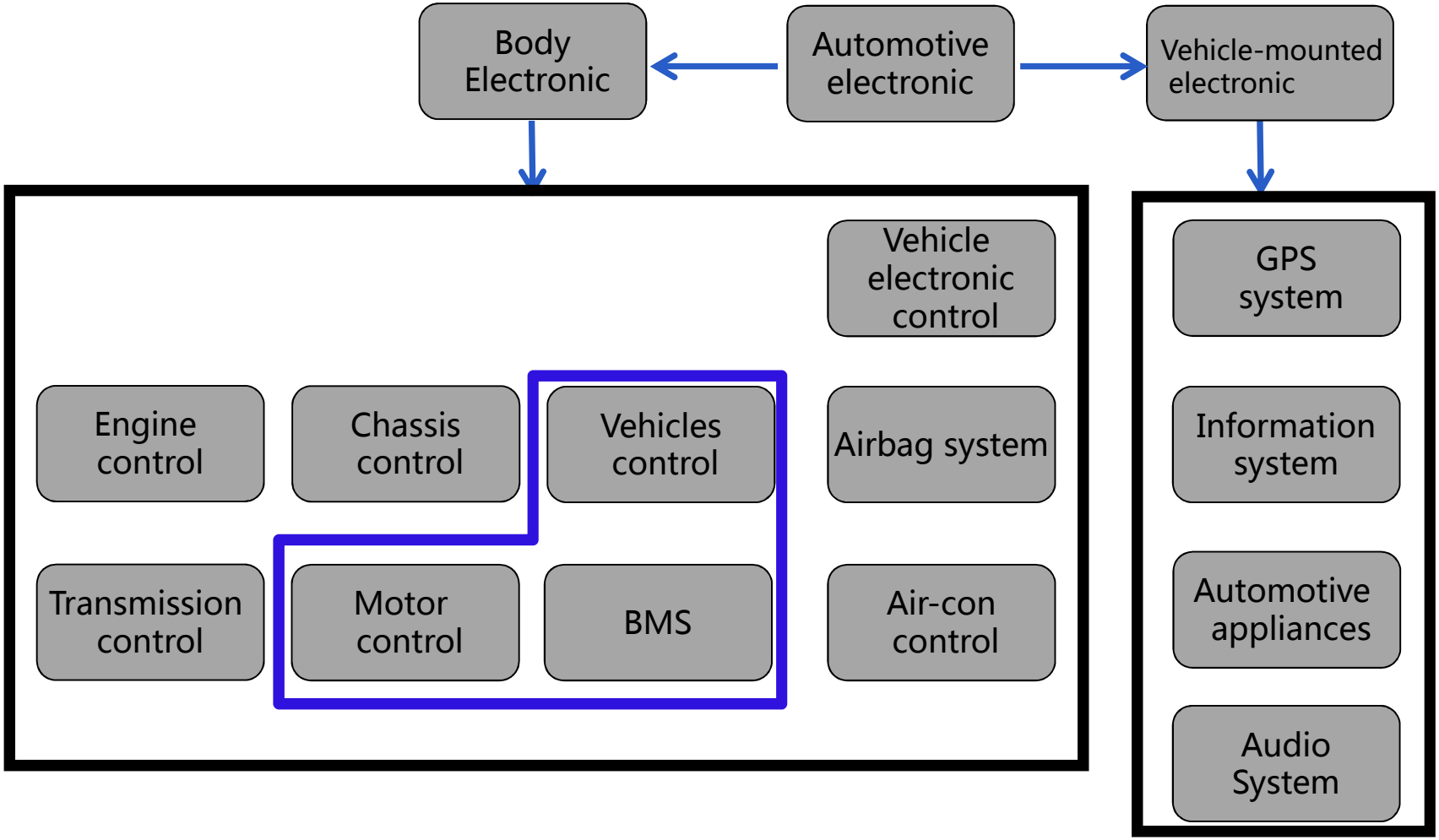
Automotive electronics is a mean to improve the vehicle safety, comfort and infotainment. It is a collective term for car body control device and vehicle control unit.



Basic structure of automotive electronics

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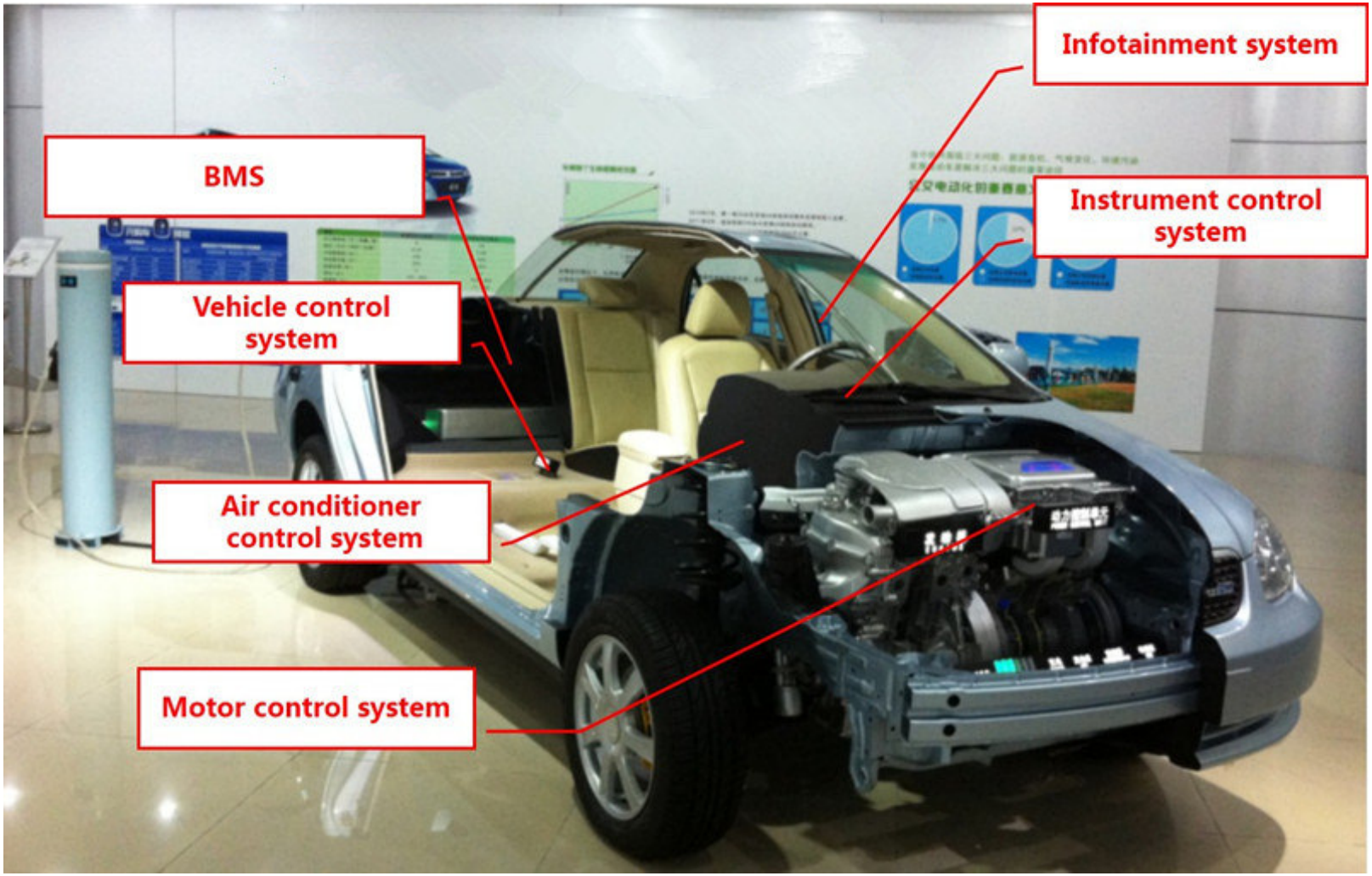

New energy vehicles

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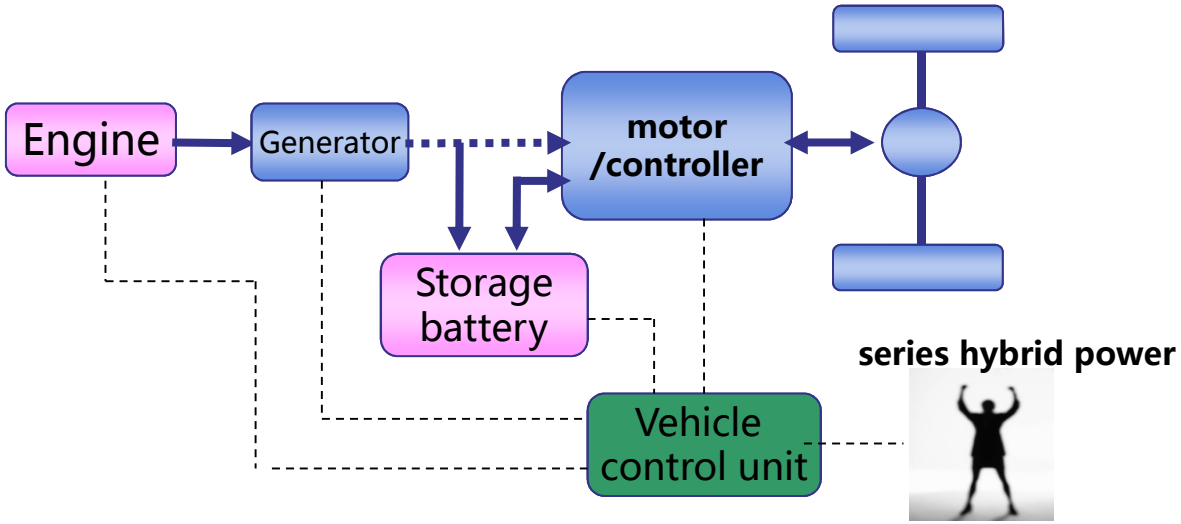

	Extended range for electricity	To improve the efficiency of internal combustion engine, through the internal combustion engine power generation to ensure internal combustion engine is always working in high efficient area, power battery as spare energy storage unit, based on the internal combustion engine technology.
Technology source	Based on pure electric drive, if necessary, use of internal combustion engine power travel distance increased, pure electric technology based.	
Core technology	Internal combustion engine work only in limited power, internal combustion engine control technology is relatively simple, can independent breakthrough technology, higher requirements of power battery charge and discharge capacity at the same time, the core technology rely on pure electric.	Maintain internal combustion engine working in high efficient area, control strategy of EMS is relatively complex, slightly below the requirements for power battery electric extended range, the core technology relies on the internal combustion engine control technology
System requirement	Required power battery has a certain capacity, repair electrical power requirement of internal combustion engine is not high	For internal combustion engine repair electrical power to meet any conditions motor driven power requirements, requirements for battery capacity is not high

Core technology of new energy vehicles

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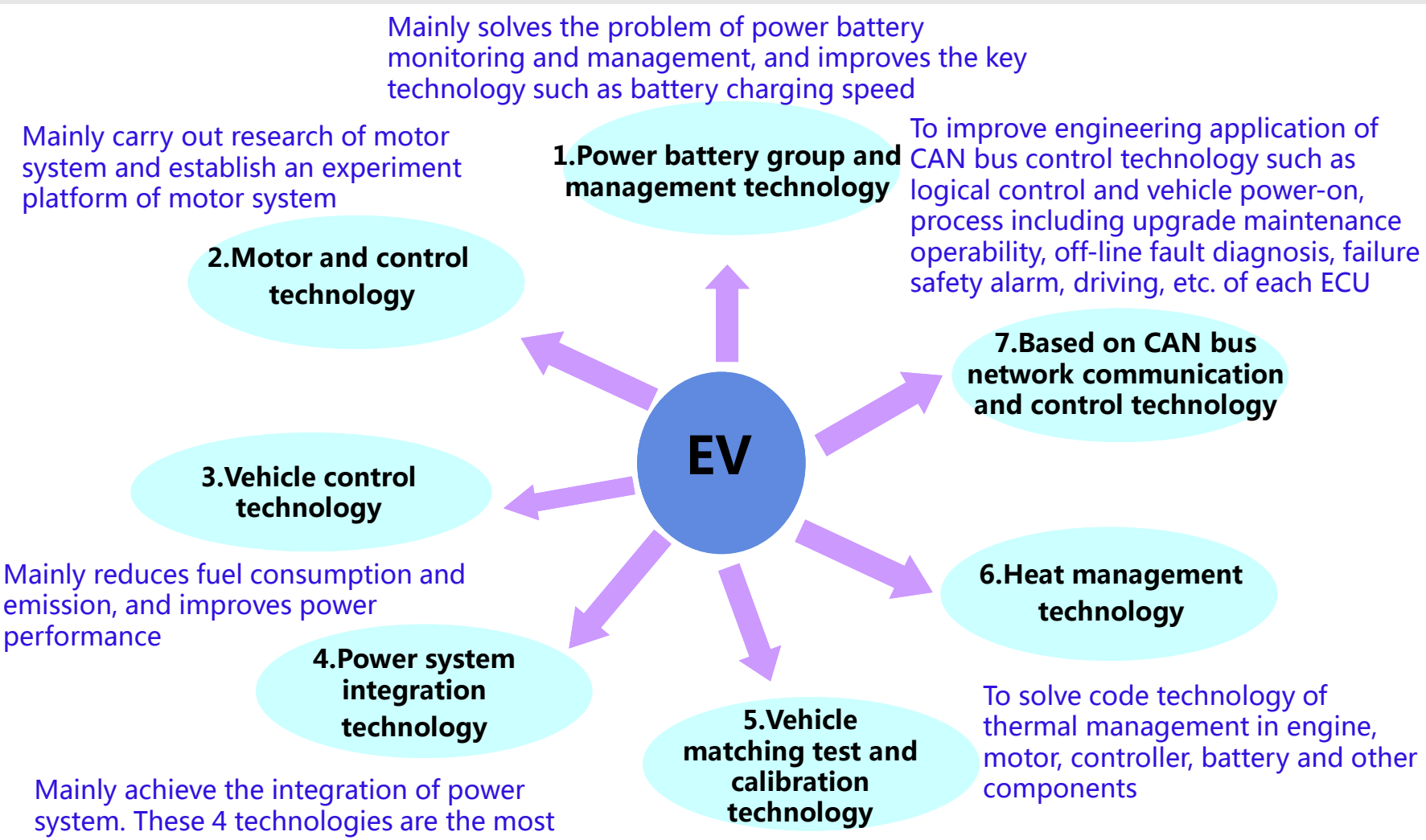

Basic structure of vehicle control system

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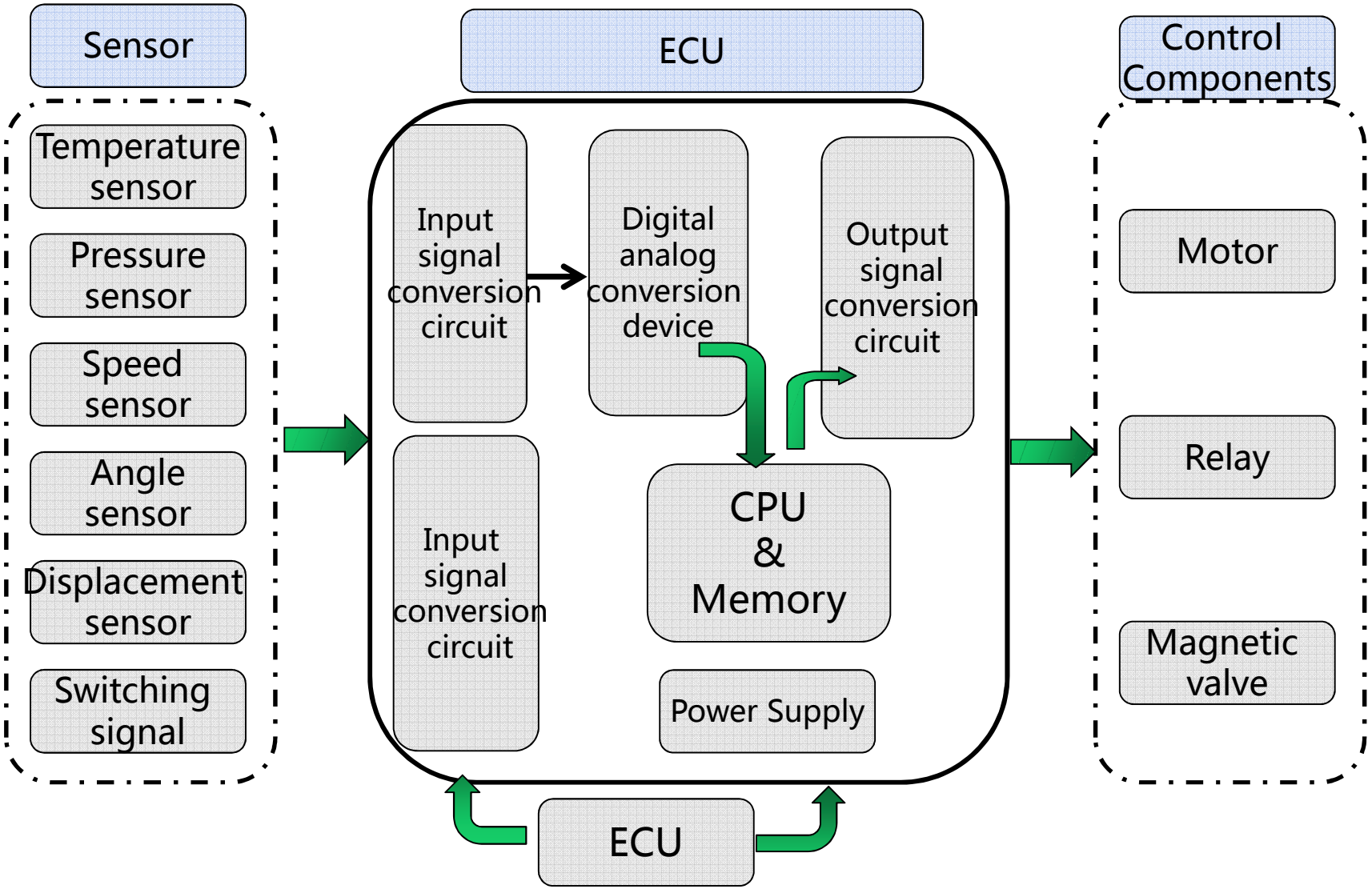

Automated transmission control system

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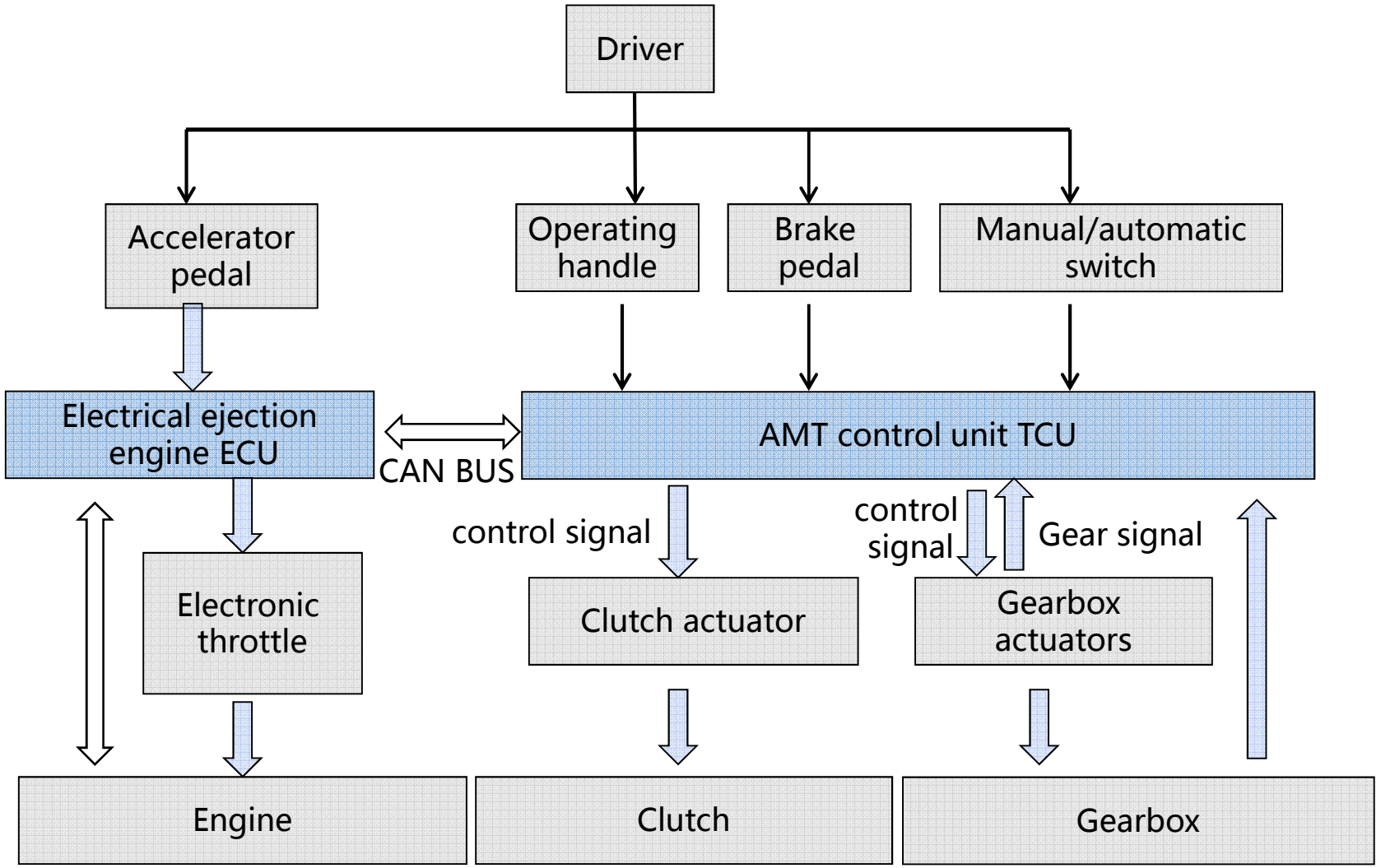

Control process of automated transmission control system

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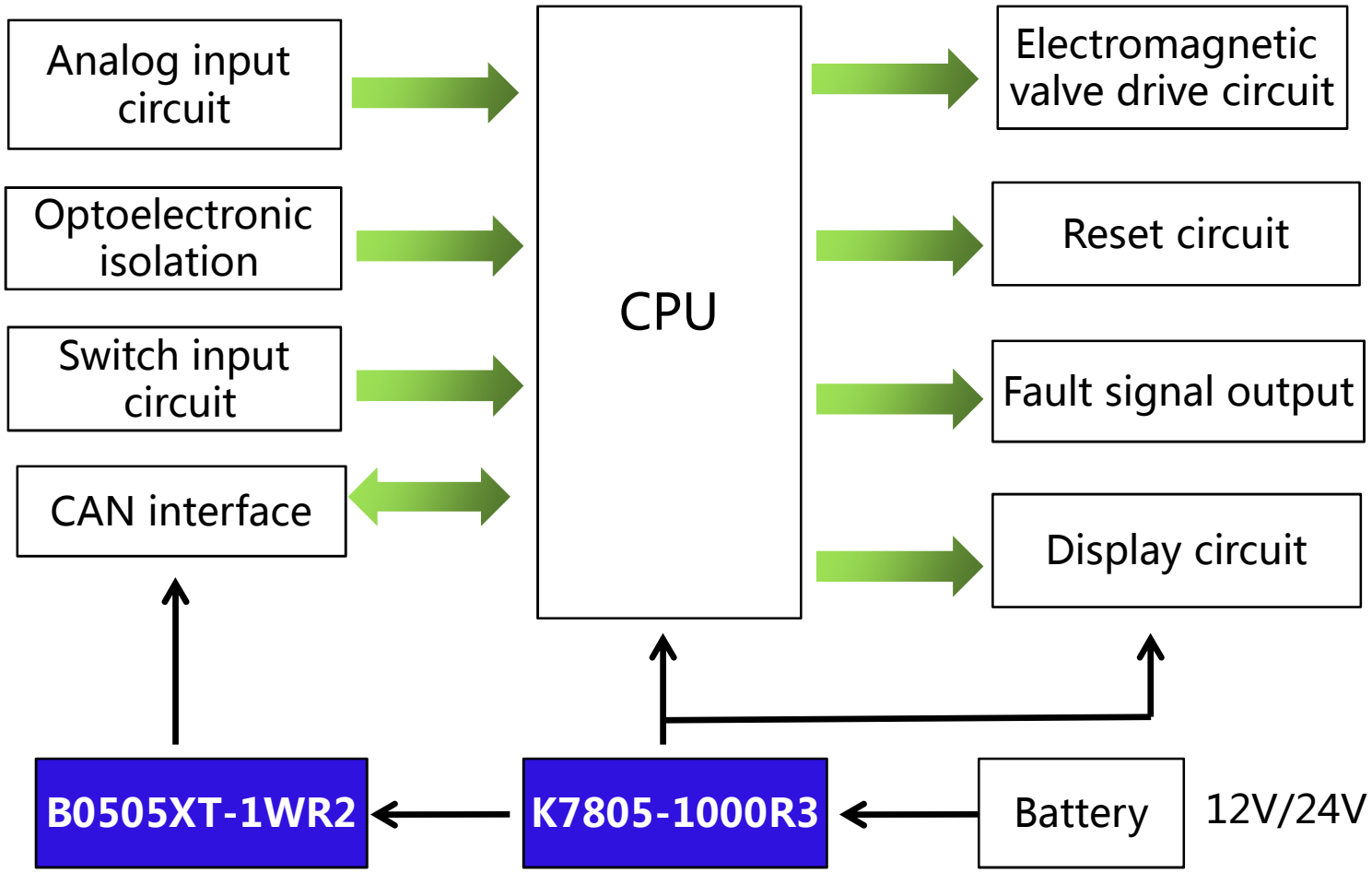

Engine management system

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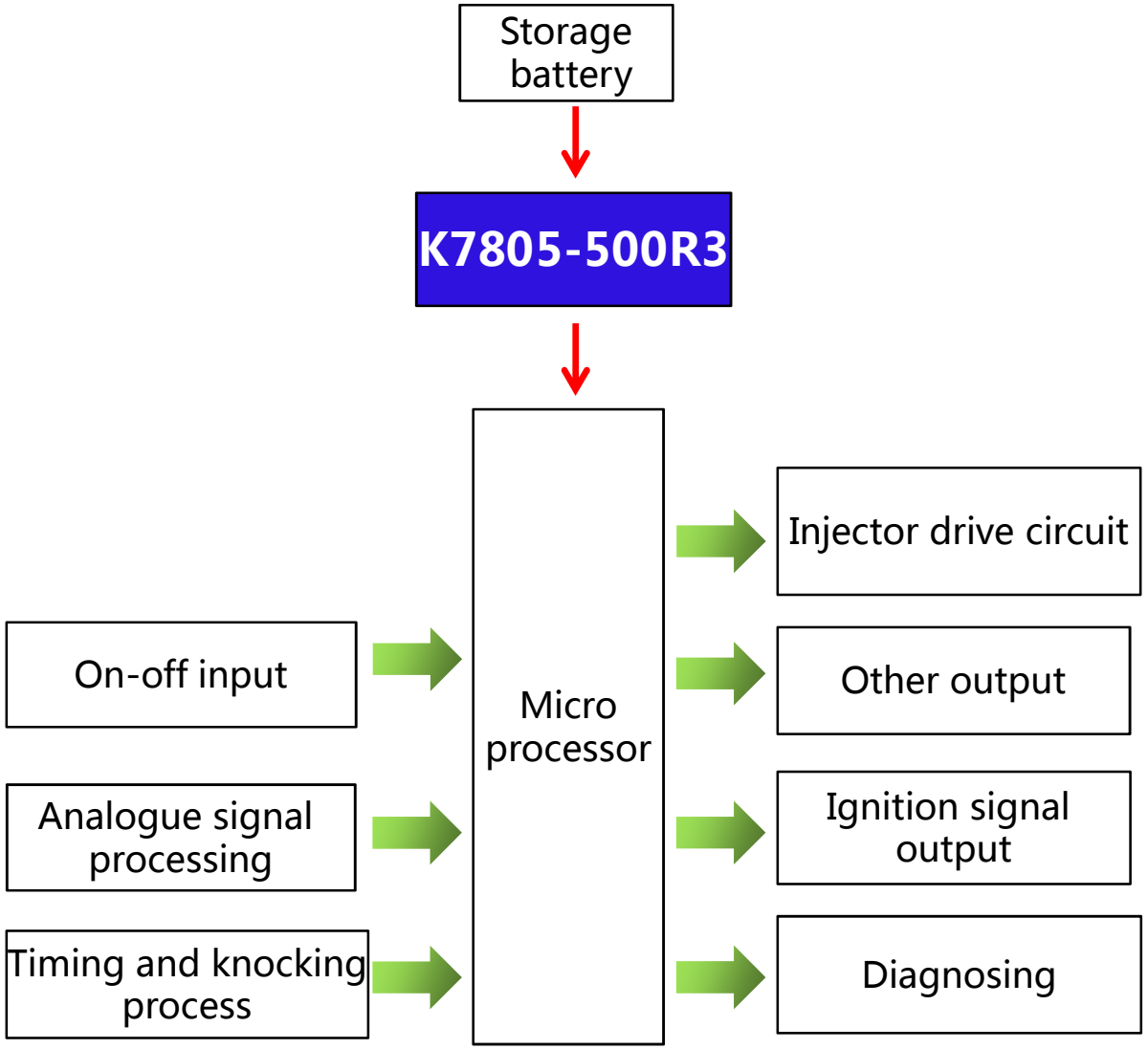

Battery management system

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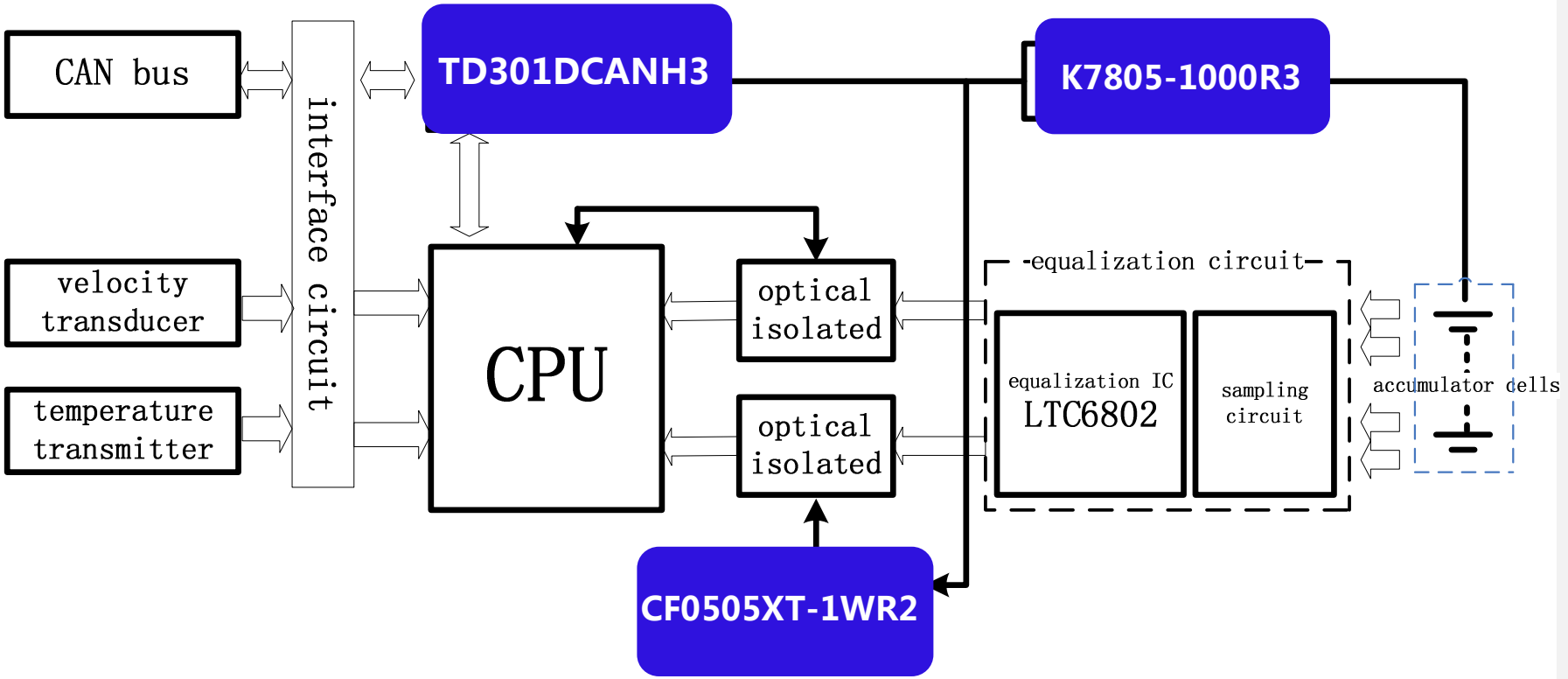

Equalization Solution for BMS

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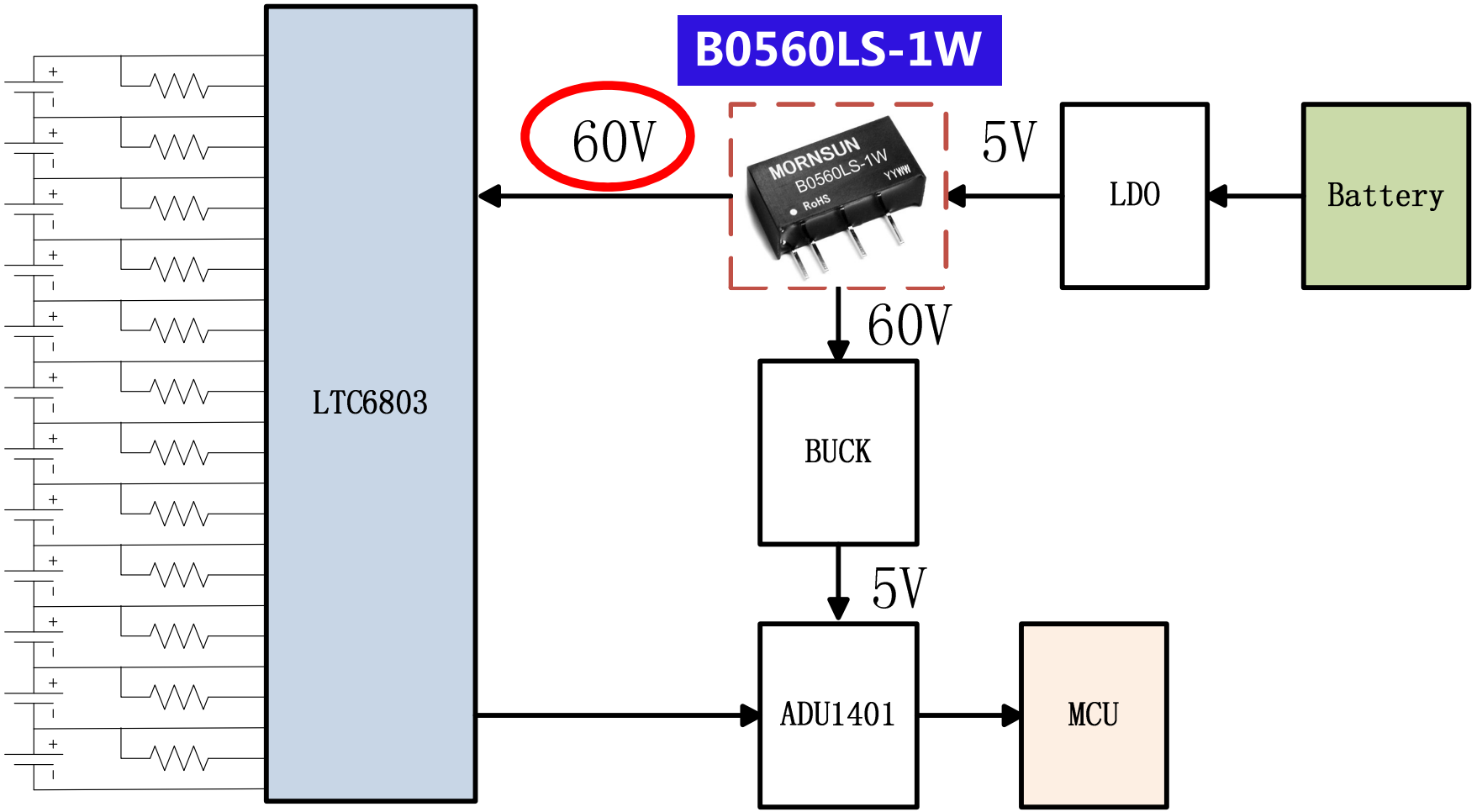
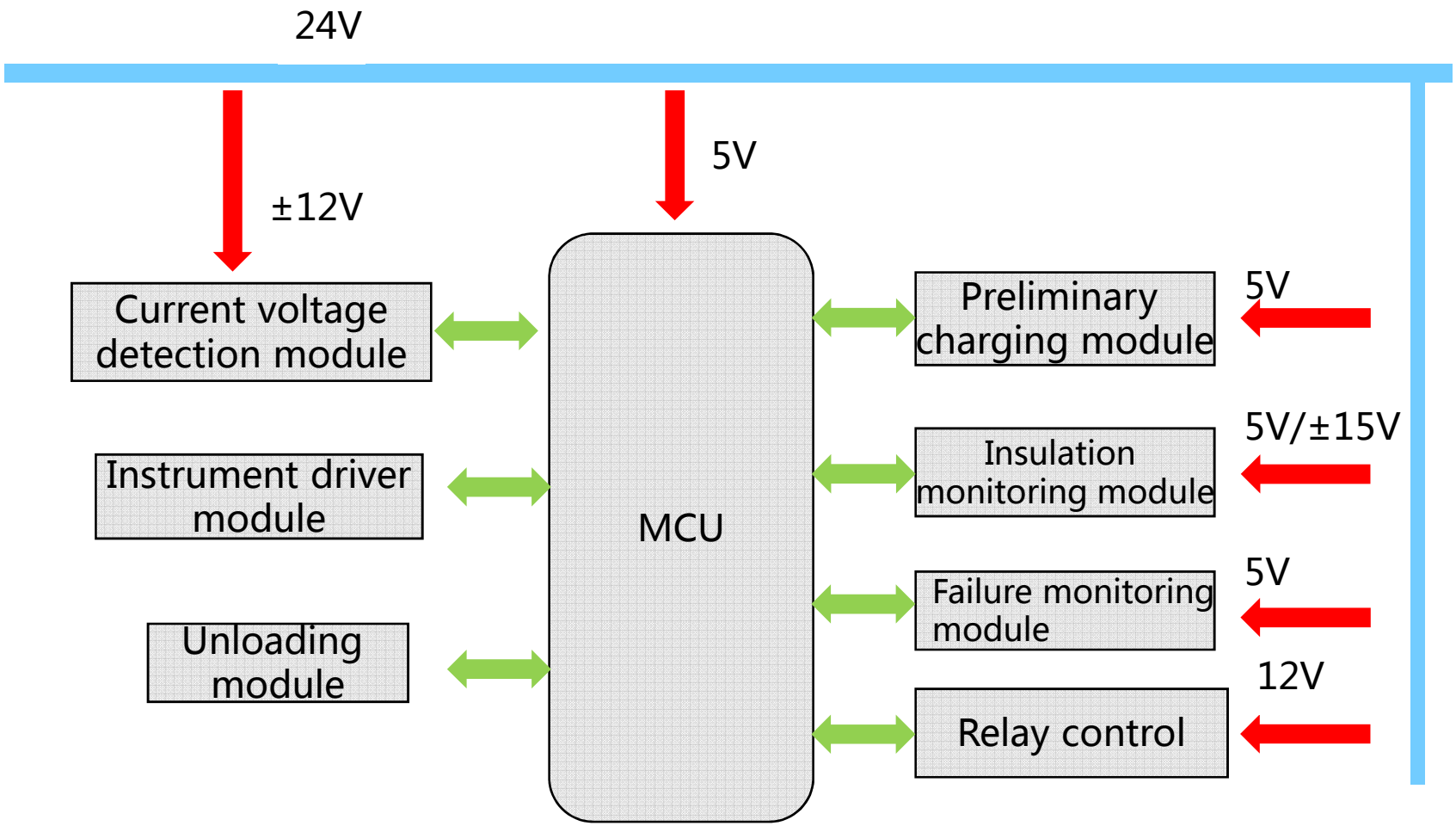


Vehicle control system



Motor control system

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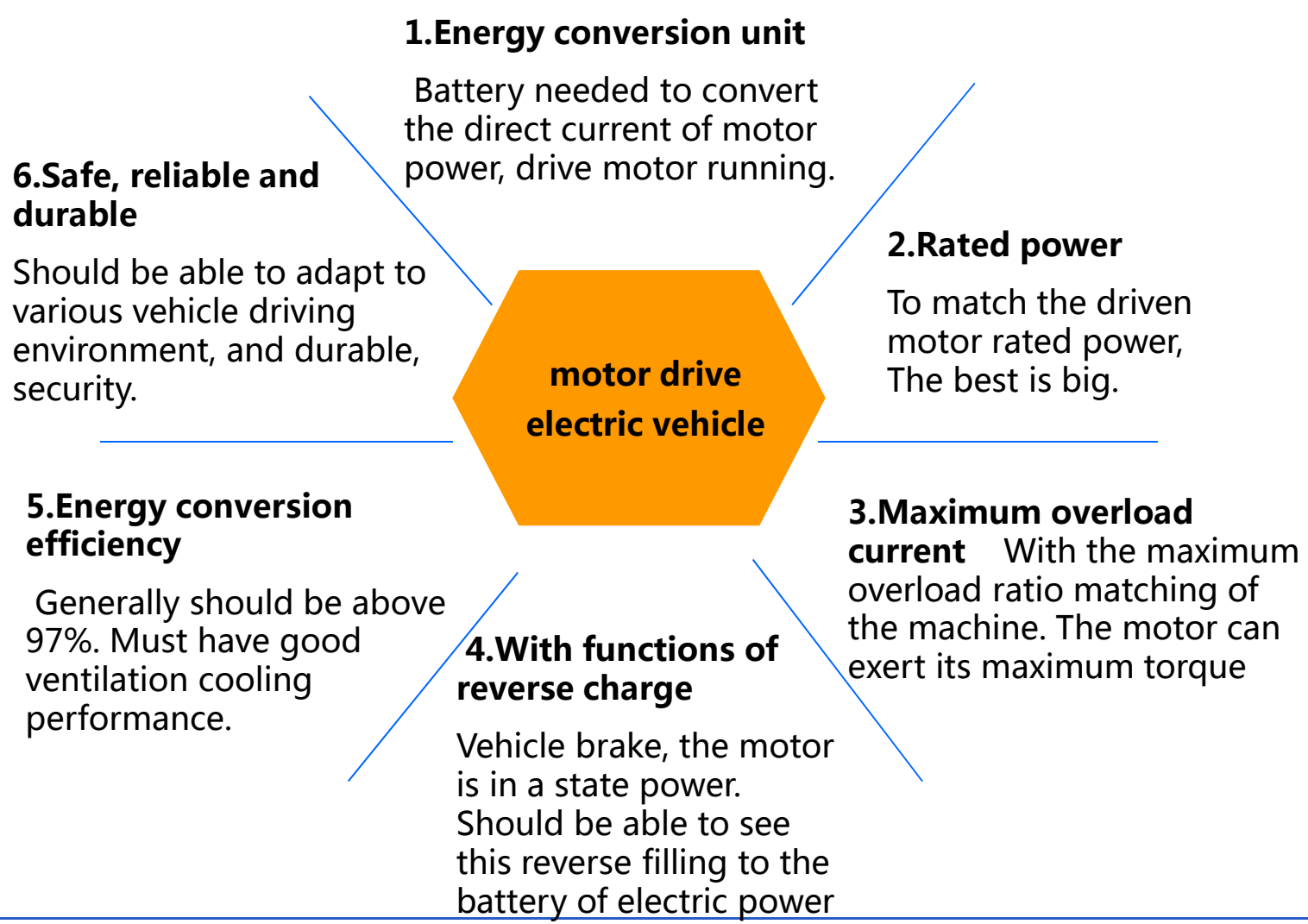
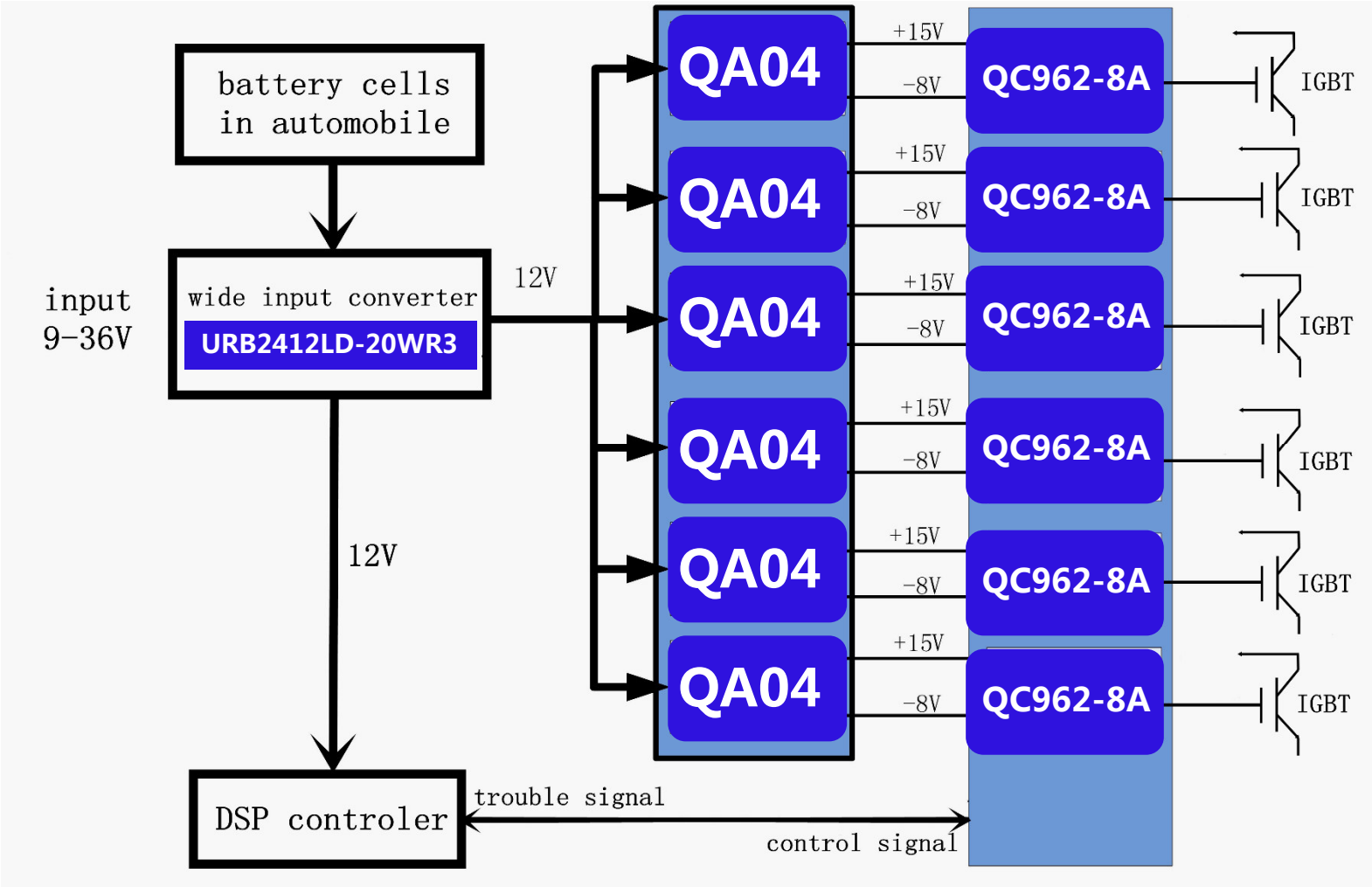


Motor control system

MORNSUN®



Air conditioner control system

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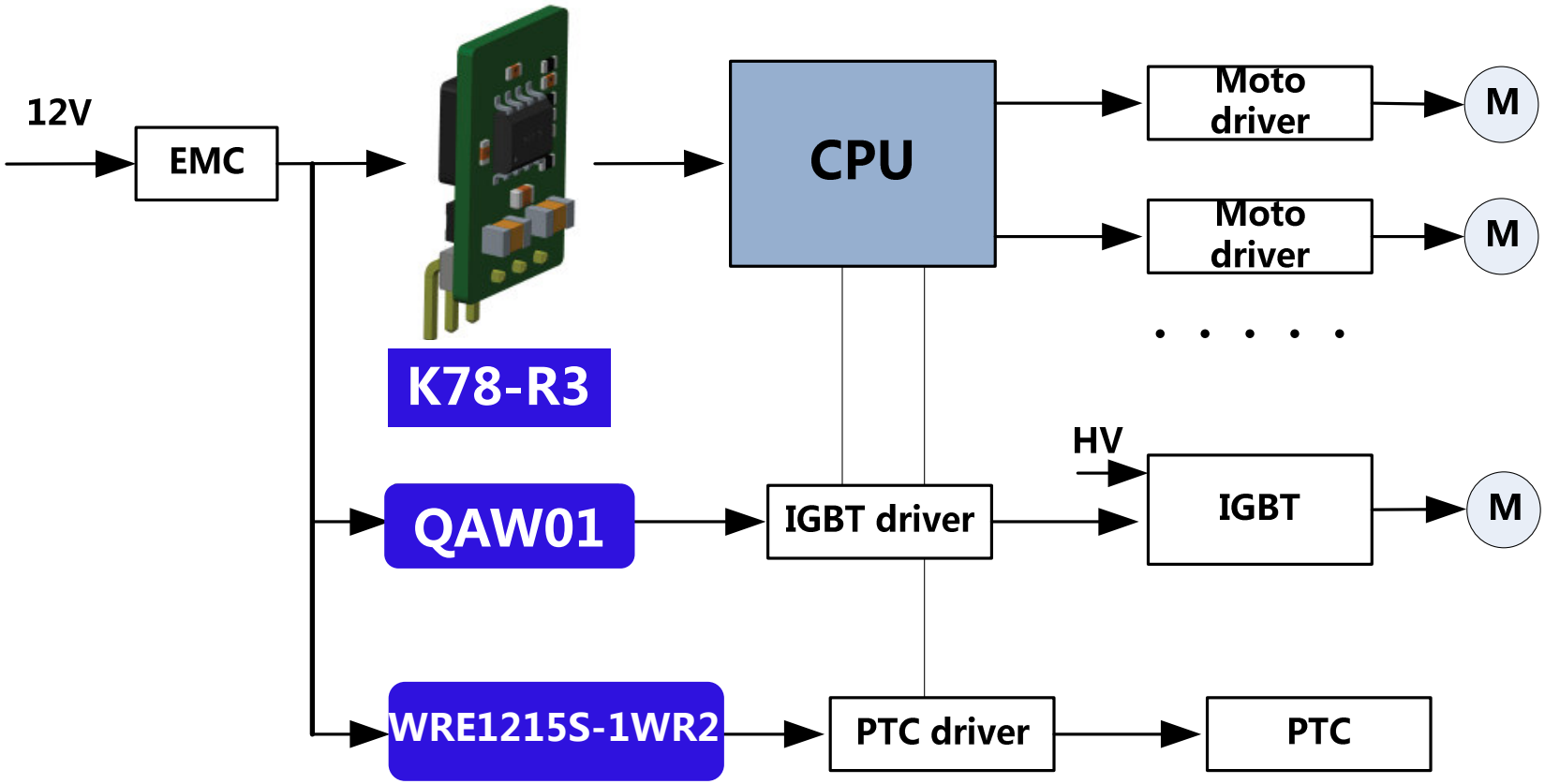

Summary

- Automated transmission control system→B0505XT-1WR2, K7805-1000R3
- Engine management system→K7805-500R3
- Battery management system→CF0505XT-1WR2,TD301CANH3,K7805-1000R3, B0560LS-1W
- Vehicle control system→ Several kinds of isolated DC-DC converter
- Motor controller→QA04
- Air conditioner controller→ K78-R3, QAW01, WRE1215S-1WR2

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AC charging spot

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- Fixed on the ground
- Uses conduction ways to provide AC power for electric vehicles which with on-board charger
- Offers man-machine interface and AC charging port
- With measurement and control protection function

AC charging spot

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Power requirements for internal components

Display module	LCD(5V, 12V, 24V power supply)power based on screen size
Communication module	232/485/CAN/wifi/GPRS/ethernet /swiping card 3.3V, 5V
Control guide	±12V/1W, ground
Relay	12V, 24V, control contactor
Electronic lock	12V, 24V, about 5W, ground
Main control unit	5V/1A

AC charging spot

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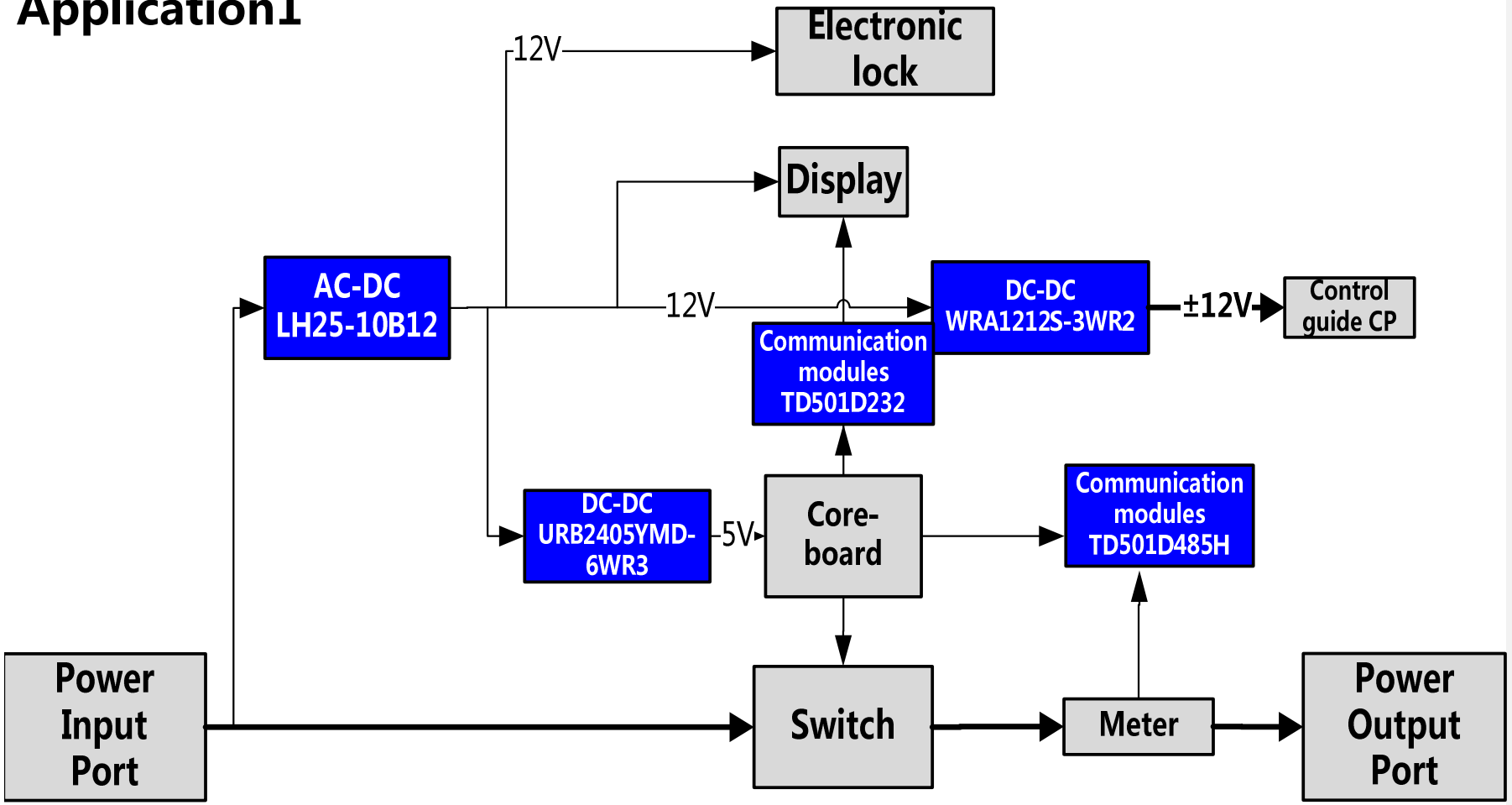
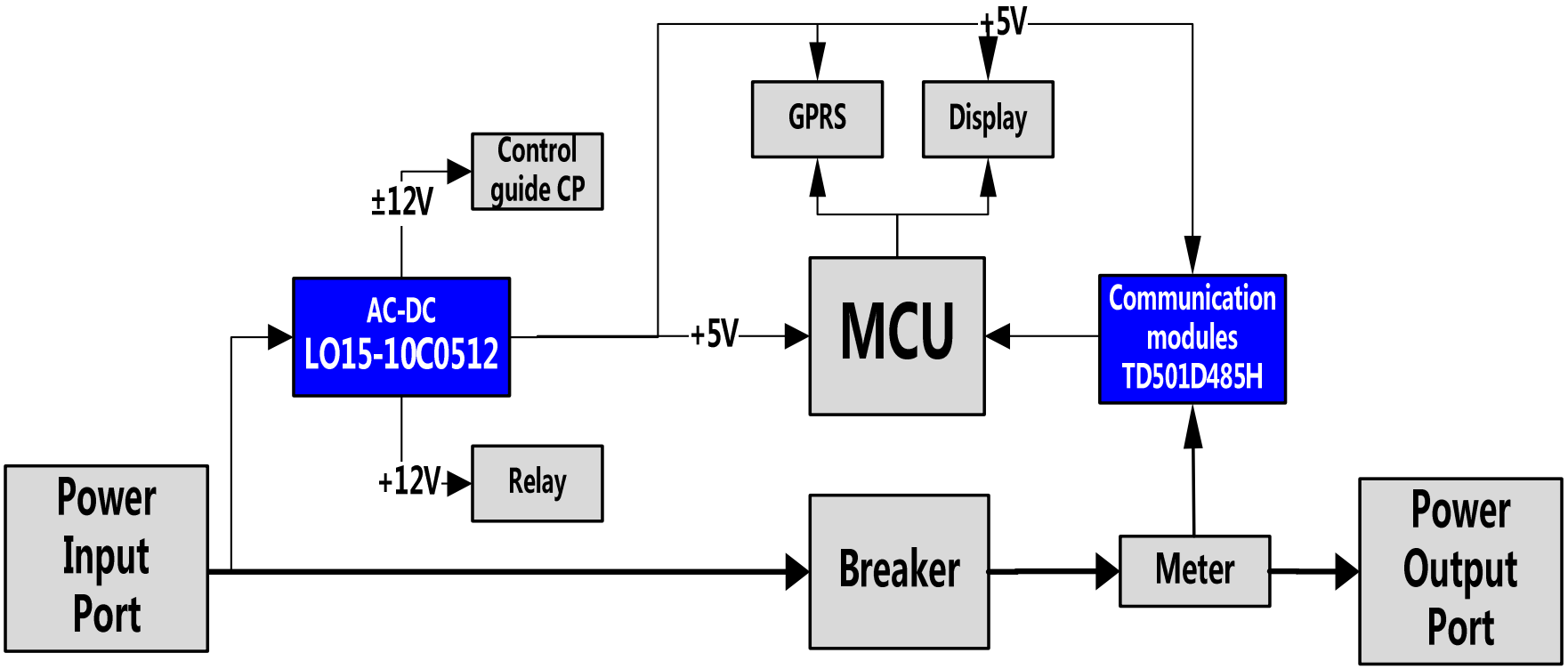
Application1



Application2



DC charging spot(off-board charger)

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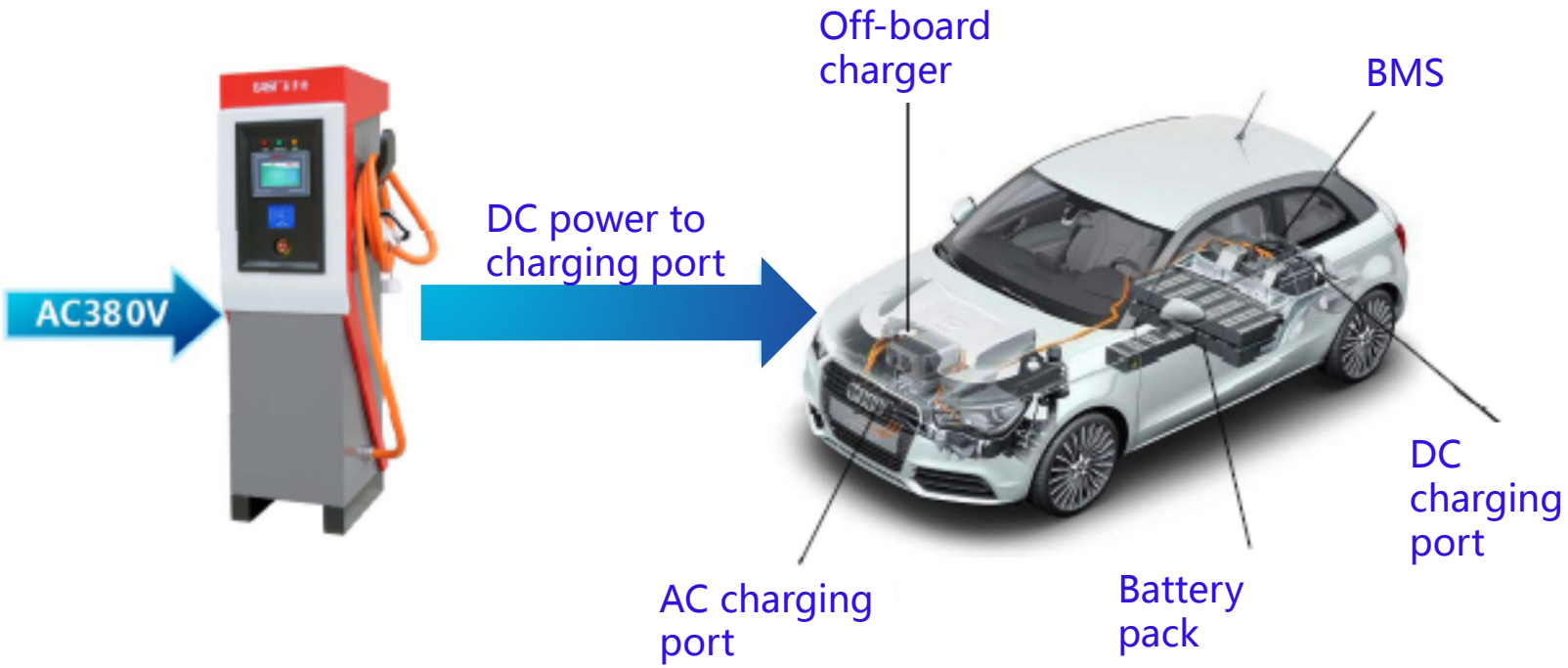
- Uses conduction ways to converter AC energy of power grid to DC energy to charge battery of electric vehicles.
- Provide man-machine interface and DC charging port.
- With measurement and control protection function.

- Mainly contains 2 parts: AC/DC conversion and DC output control.
- Integral DC charging spot and split DC charging spot.



DC charging spot—Integral charger

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Integrate AC/DC conversion and DC output control unit.

Features: is installed outdoors, high protection level requirements, up to 150KW

Advantages: easy installation, layout, construction simple and quick charging machine.

DC charging spot—Split charger

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Has separate AC-DC conversion part and DC output control part. These 2 separate parts are combined by cable.

Features:
1. Charging machine installed indoors, low protection level requirement.
2. Outdoor parking charging pile installation, protection level IP54.

Advantages: good charging machine running environment, no need for special handling of ventilation and heat dispersion.

Weaknesses: charging machine room cost is high, long construction period.

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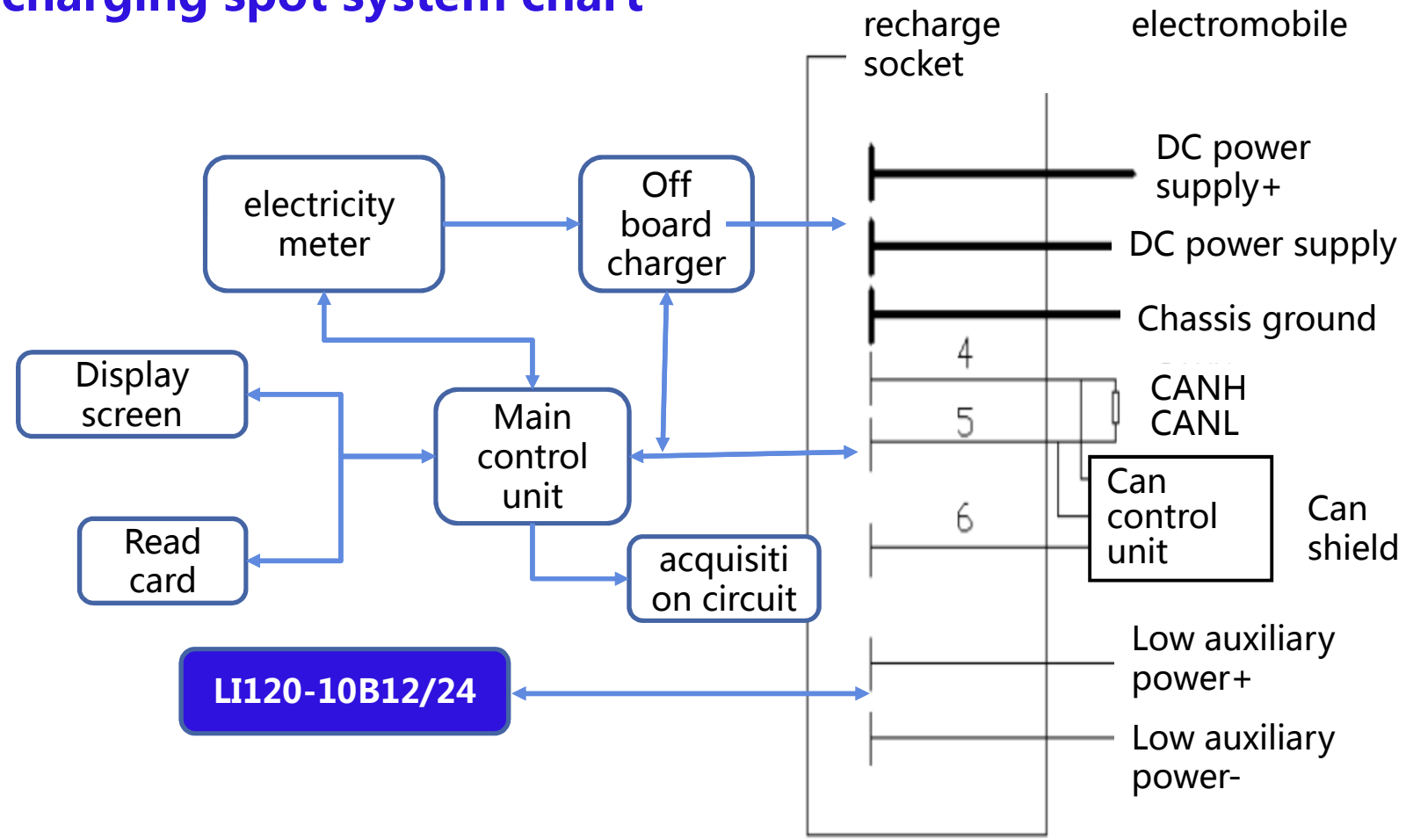
DC charging spot system chart



DC charging spot

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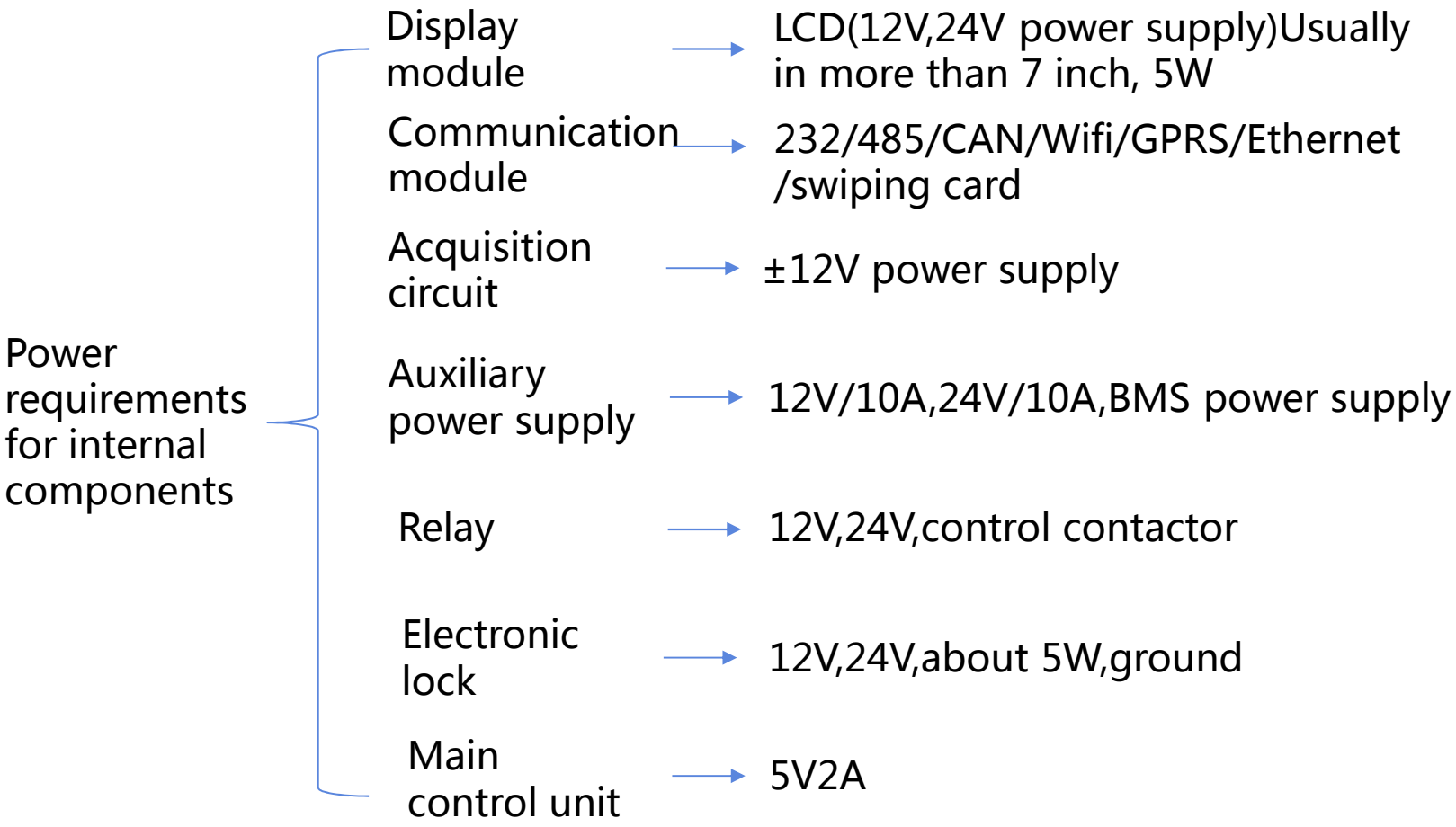

DC charging spot

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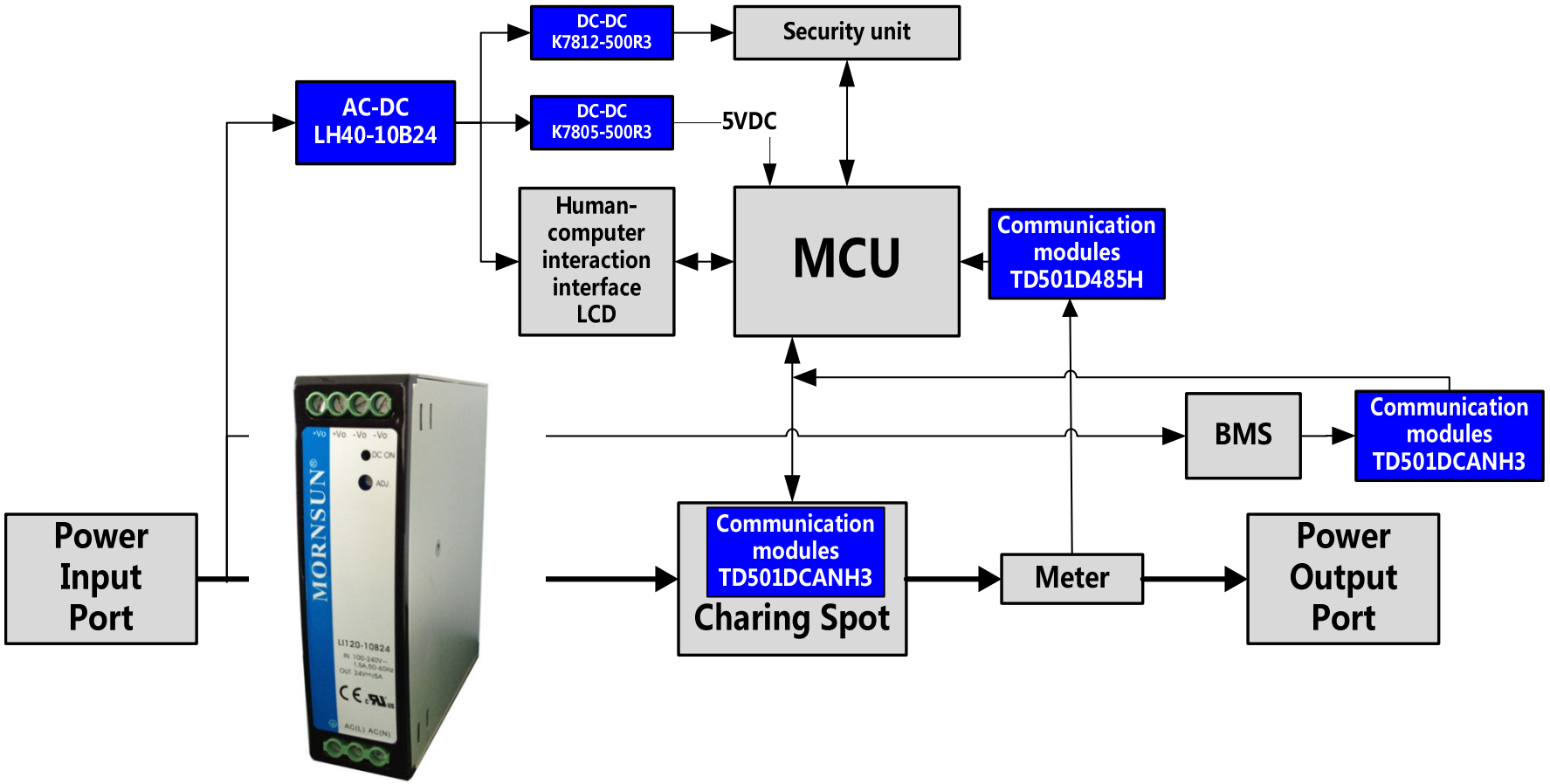
Application



Summary

AC charging spot

LH25-10B12
URB2405YMD-6WR3
TD501D232
TD501D485H
WRA1212S-3WR2

DC charging spot

LI120-10B12
LH40-10B24
K7812-500R3
K7805-500R3
TD series

Thank You!