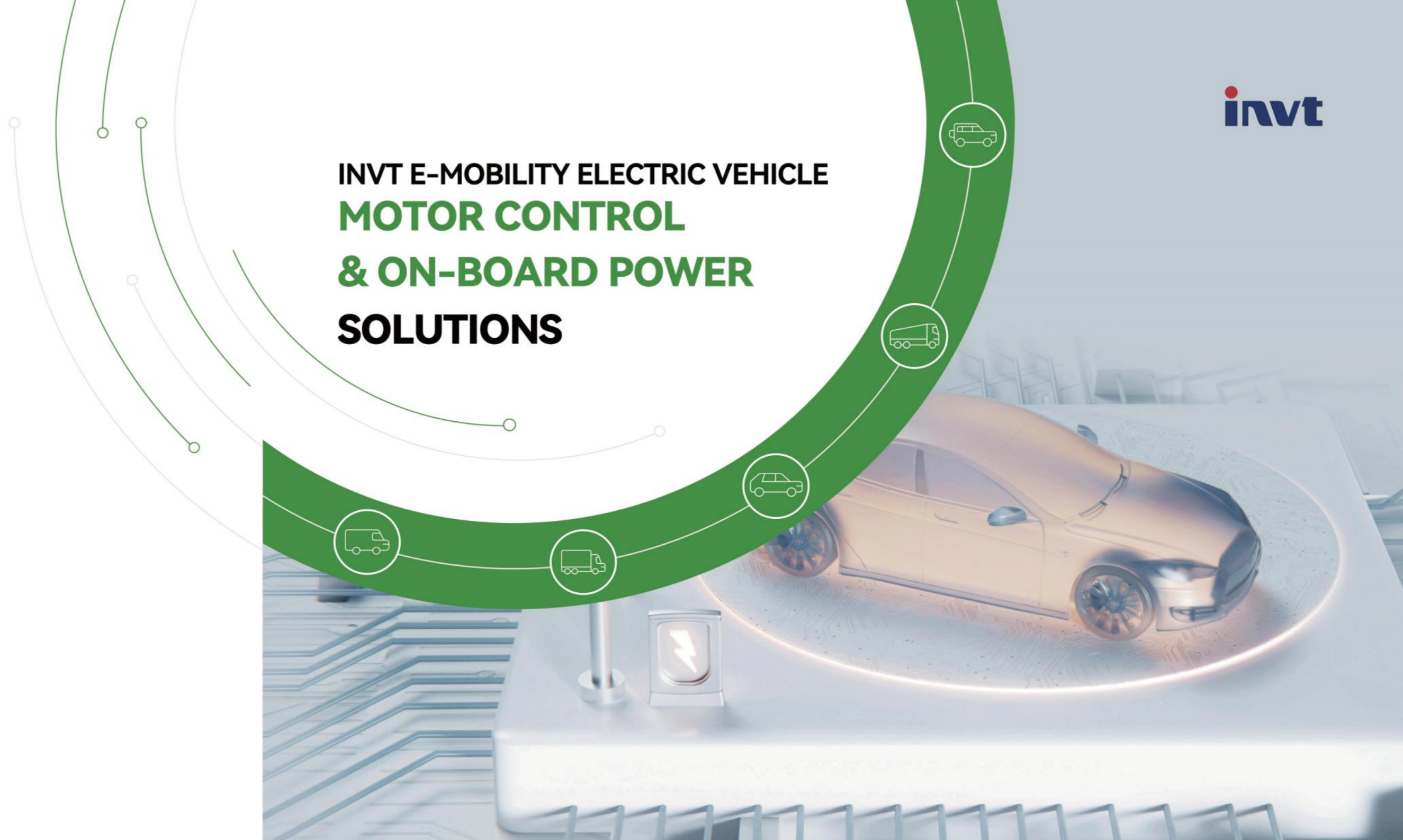




# INVT E-MOBILITY ELECTRIC VEHICLE MOTOR CONTROL & ON-BOARD POWER SOLUTIONS

INVT Electric Vehicle Drive Technology (Shenzhen) Co., Ltd.

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To be the global leading and respected provider of e-mobility solutions.



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Company Profile

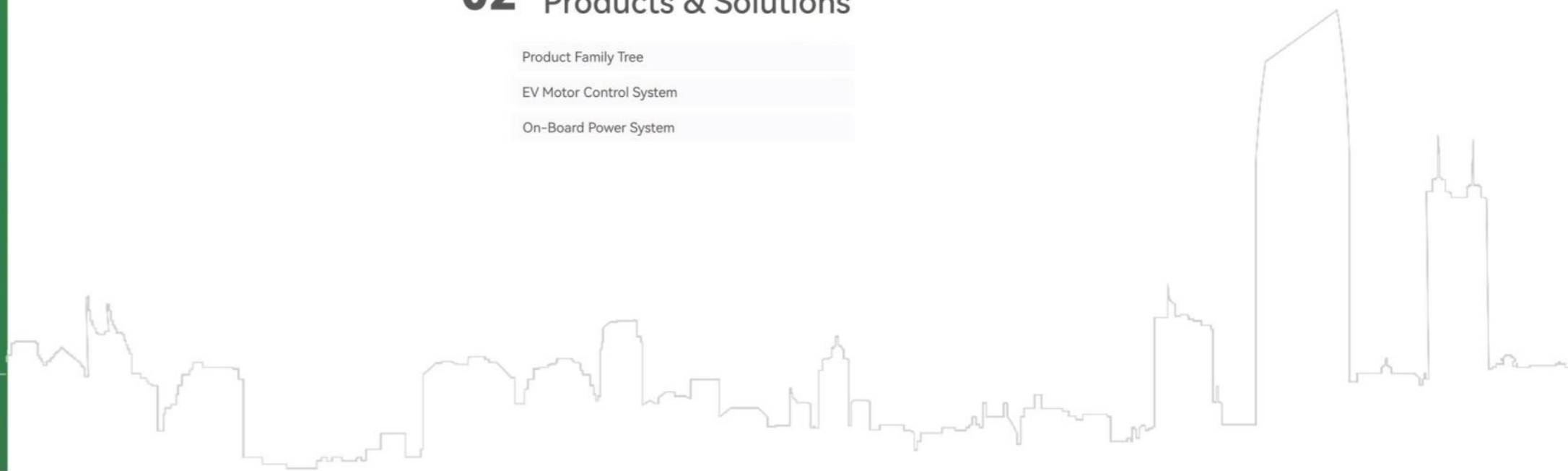
Sales Network

## 02 Products & Solutions

Product Family Tree

EV Motor Control System

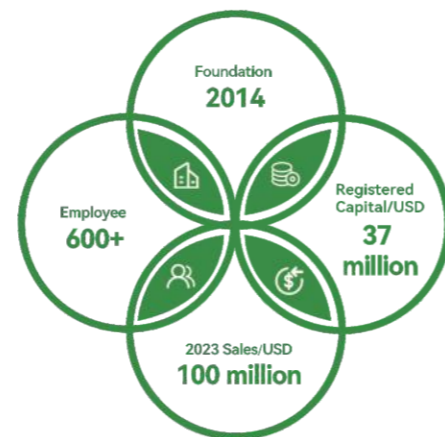
On-Board Power System



## INTRODUCTION

INVT Electric Vehicle Drive Technology(Shenzhen) Co., Ltd. ( hereafter INVT E-mobility), a holding subsidiary of Shenzhen INVT Electric Co, Ltd. (SZ002334), is the main body of INVT electric vehicle business. Founded in 2014, the company is a national high-tech enterprise focusing on R&D, production, sales, and service of electric vehicle products and solutions.

With 10+ years of dedication and professionalism, INVT E-mobility has developed a comprehensive business of EV motor controllers, on-board power, and EV chargers, providing multi-scenario solutions for sustainable and green transportation. Dedicated to being the global leading & respected provider of e-mobility solutions, INVT E-mobility persists in technology innovation and continually creates value for customers worldwide.



## INDUSTRIAL LANDSCAPE



**INVT Guangming Technology Building**

HQ and R&D Center

**Area: 41,000 m<sup>2</sup>**



**Fuyong Industrial Park, Shenzhen**

Manufacturing Base

**Area: 41,000 m<sup>2</sup>**

**Auto-production Line: 2**

**Production Line: 12**

**Production Capacity: 500,000pcs**



**Zhongshan Industrial Park (Building)**

R&D Center and Manufacturing Base

**Area: 150,000 m<sup>2</sup>**

**Production Line: 12**

## SALES NETWORK



## EV Motor Control System



### Commercial Vehicle Motor Controller



GVD520-3L11-050



GVD520-5L50-110/140



GVD550-5L14-110/140/200



GVD650-5L10-240/280



GVD550-5L51-200/240/280



GVD550-5L60-140/240

### Passenger Car Motor Controller



IFL300-35



IFL300-36

### Auxiliary Motor Controller



GVD500-32LZ



GVD500-41LT



GVD500-42LT



GVD500-43LT

## On-board Power System



### CDU: DCDC +OBC+PDU



GVD570 P3R3A1R5LL

### DCDC Converter



GVD510-1CM6ROLD



GVD510-3AM3ROLD /3BM3ROLD

### Applications



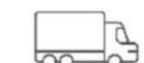
Electric Passenger Car



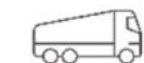
Hybrid Electric Vehicle



Minivan



Logistics Truck



Medium/Heavy Truck



Construction Vehicle



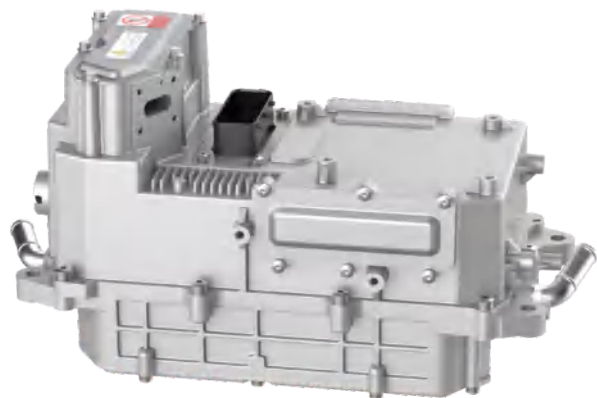
Coach/Bus



# EV MOTOR CONTROL SYSTEM

- IFL300 Series
- GVD520 Series
- GVD550 Series
- GVD650 Series
- GVD500 Series

## IFL300-35



### Application



HEV / PHEV

### Features

- Advanced topology and functional safety design
- Comprehensive UDS diagnostic services
- High-speed output capability (4-pole motors at 1500rpm)
- High power density, up to 25kW/L
- IP68 protection rating
- Model-Based Development (MBD)
- AutoSAR software architecture

Specification			
Function integration			MCU+GCU+TCU
MCU	Input	High voltage	200-450V
		Low voltage	12V
	Output	Power	Rated 35kW Peak 70kW
		Output current	Rated 160A Peak 251A
	Operating frequency	0-1200Hz	
GCU	Input	High voltage	200-450V
		Low voltage	12V
	Output	Power	Rated 12kW Peak 50kW
		Output current	Rated 77A Peak 194A
	Operating frequency	0-1200Hz	
System characteristic		Operating temperature	-40~105°C
		Cooling method	Liquid cooling
		Dimensions	239L*257.5W*102.5H
		Weight	≤ 12kg
	IP grade	IP68	

# IFL300-36



## Features

- Advanced topology and functional safety design
- Comprehensive UDS diagnostic services
- High-speed output capability (4-pole motors at 1500rpm)
- High power density, up to 25kW/L
- IP68 protection rating
- Model-Based Development (MBD)
- AutoSAR software architecture

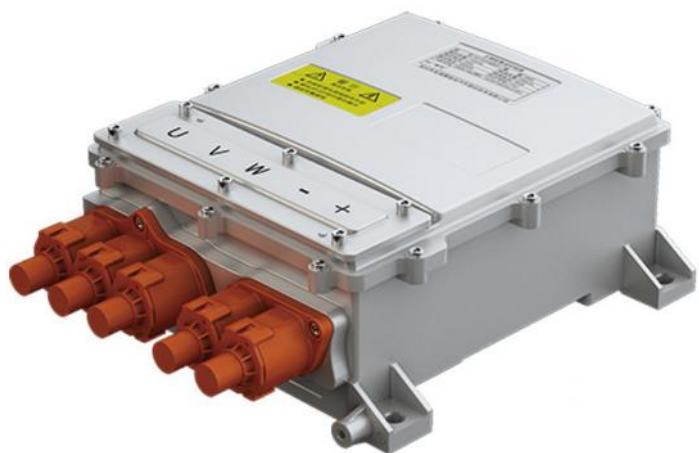
## Application



HEV / PHEV

Specification			
Function integration			MCU+GCU+TCU
MCU	Input	High voltage	200-450V
		Low voltage	12V
	Output	Power	Rated 60kW Peak 150kW
		Output current	Rated 205A Peak 510A (10S)
		Operating frequency	0-1200Hz
GCU	Input	High voltage	200-450V
		Low voltage	12V
	Output	Power	Rated 60kW Peak 80kW
		Output current	Rated 230A Peak 380A (10S)
		Operating frequency	0-1200Hz
System characteristic		Operating temperature	-40°C ~105°C
		Cooling method	Liquid cooling
		Dimensions	480.43*220.87*209.8
		Weight	≤ 12kg
		IP grade	IP68

# GVD520-3L11-050



## Application


**Minivan**

## Features

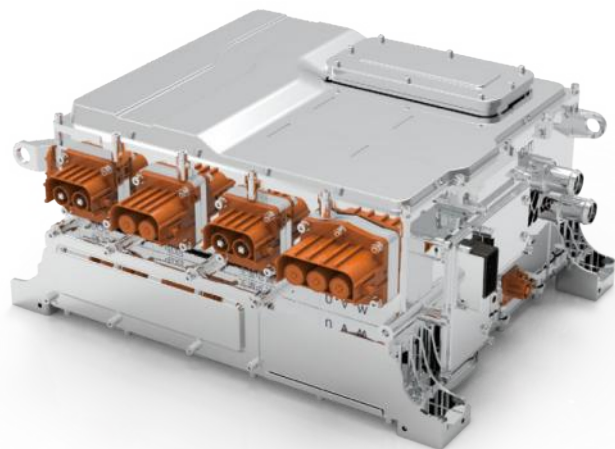
- Selection and application of automotive-grade components with various hardware and software protection features
- Independent wiring box structure design for secure and fast wiring
- High power density, compact product size, and versatile application
- Design of high protection and wide temperature range products to adapt to various harsh application environments
- Closed-loop control mode to meet functionalities such as active damping and active discharge

### Specification

Function integration		MCU
Application		Minivan
Input	High voltage	200-450V
	Low voltage	12V or 24V
Output	Power	Rated 50kVA Peak 100kVA
	Output current	Rated 125A Peak 250A (60S)
	Operating frequency	0-800Hz
System characteristic	Operating temperature	-40~85°C
	Cooling method	Liquid cooling
	Dimensions	239L*257.5W*102.5H
	Weight	≤ 6kg
	IP grade	IP67



# GVD520-5L50-110/140



## Application

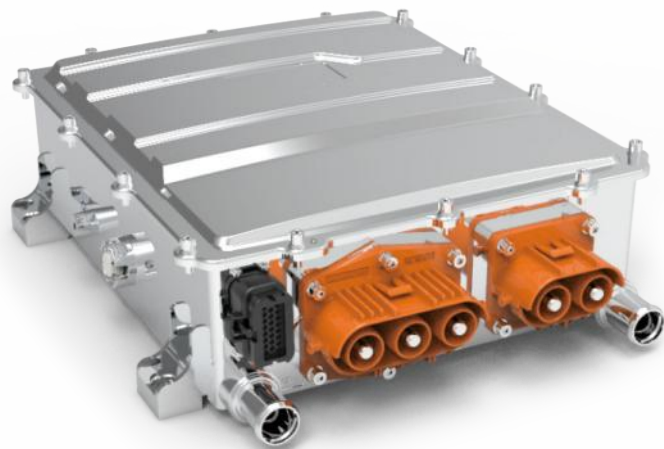

**Light Truck**

## Features

- High integration, 42% smaller in size compared to similar products on the market
- Modular design for easy maintenance and component replacement
- Robust fault protection mechanisms, including adhesive detection and HVIL
- EMC compliance with Class 3 under load and Class 5 in no-load conditions
- Support UDS, OTA, and CAN integration

Specification			
Product module		GVD520-5L50-110	GVD520-5L50-140
Function integration		MCU+2*DCAC+DCDC+PDU	
Application		Light truck	
Input	High voltage	400-750V	
	Low voltage	12V or 24V	12V or 24V
Output (MCU)	Power	Rated 110kVA Peak 220kVA	Rated 140KVA Peak 280KVA
	Output current	Rated 160A Peak 320A (60S)	Rated 200A Peak 400A (60S)
	Operating frequency	0-800Hz	0-800Hz
System characteristic	Operating temperature	-40~80°C	-40~80°C
	Cooling method	Liquid cooling	Liquid cooling
	Dimensions	495W*400D*230H	495W*400D*230H
	Weight	≤ 25kg	≤ 25kg
	IP grade	IP67	IP67

# GVD550-5L14-110/140/200



## Application



Light Truck



Coach

## Features

- High integration and cost-effectiveness
- High power density and mechanical strength
- Robust fault protection mechanisms
- Modular design for easy maintenance
- High reliability and protection
- EMC meets Class 3 standards
- Structurally designed to withstand 6G vibrations
- Hardware support for UDS and BT firmware flashing
- Software features include IGBT junction temperature estimation and ASC functionality
- DCDC options available: 3kW, 4.5kW, 6kW
- DCAC options available: 5.5kW, 7.5kW

Specification				
Product module		GVD550-5L14-110	GVD550-5L14-140	GVD550-5L14-200
Function integration		MCU	MCU	MCU
Application		Light truck, 6M Coach	Light truck, 8M Coach	Light truck, 10M Coach
Input	High voltage	200-750V	200-750V	200-750V
	Low voltage	12V or 24V	12V or 24V	12V or 24V
Output	Power	Rated 110kVA Peak 220kVA	Rated 140kVA Peak 280kVA	Rated 200kVA Peak 400kVA
	Output current	Rated 160A Peak 320A (60S)	Rated 200A Peak 400A (60S)	Rated 280A Peak 560A (60S)
	Operating frequency	0-800Hz	0-800Hz	0-800Hz
System characteristic	Operating temperature	-40~85°C	-40~85°C	-40~85°C
	Cooling method	Liquid cooling	Liquid cooling	Liquid cooling
	Dimensions	391W×320D×122.5H	391W×320D×122.5H	391W×320D×122.5H
	Weight	≤ 10kg	≤ 10kg	≤ 10kg
	IP grade	IP67	IP67	IP67

# GVD550-5L51-200/240/280



## Application



Medium/Heavy Truck

## Features

- High integration and cost-effectiveness
- High power density and mechanical strength
- Robust fault protection mechanisms
- Modular design for easy maintenance
- High reliability and protection
- EMC meets Class 3 standards
- Structurally designed to withstand 6G vibrations
- Hardware support for UDS and BT firmware flashing
- 6kW DCDC optional
- 5.5kW and 7.5kW DCAC optional

Specification				
Product module		GVD550-5L51-200	GVD550-5L51-240	GVD550-5L51-280
Function integration		MCU+2*DCAC+DCDC+PDU		
Application		Medium/Heavy truck	Medium/Heavy truck	Medium/Heavy truck
Input	High voltage	400-750V	400-750V	400-750V
	Low voltage	24V	24V	24V
Output (MCU)	Power	Rated 200kVA Peak 400kVA	Rated 240kVA Peak 480kVA	Rated 280kVA Peak 560kVA
	Output current	Rated 280A Peak 560A (60S)	Rated 350A Peak 700A (60S)	Rated 350A Peak 800A (60S)
	Operating frequency	0-600Hz	0-600Hz	0-600Hz
System characteristic	Operating temperature	-40~85°C	-40~85°C	-40~85°C
	Cooling method	Liquid cooling	Liquid cooling	Liquid cooling
	Dimensions	670L*488W*244H	670L*488W*244H	670L*488W*244H
	Weight	≤ 45kg	≤ 45kg	≤ 45kg
	IP grade	IP68	IP68	IP68

# GVD550-5L60-140/240



## Application



Coach



Sanitation Truck

## Features

- Optionally equipped with bus Hall sensors for CAN network transmission
- Hardware over-voltage protection function
- Multiple wiring options, including dual input/output and single input/output;
- Support OTA
- Withstand random vibrations up to 6G and frequency sweep up to 3G
- 6kW DCDC optional
- 5.5kW and 7.5kW DCAC optional

Specification			
Product module		GVD550-5L60-140	GVD550-5L60-240
Function integration		MCU+2*DCAC+DCDC+PDU	MCU+2*DCAC+DCDC+PDU
Application		8M Coach, Sanitation truck	12M Coach, Sanitation truck
Input	High voltage	400-750V	400-750V
	Low voltage	24V	24V
Output (MCU)	Power	Rated 140kVA Peak 280kVA	Rated 240kVA Peak 480kVA
	Output current	Rated 200A Peak 400A (60S)	Rated 350A Peak 700A (60S)
	Operating frequency	0-600Hz	0-600Hz
System characteristic	Operating temperature	-40~85°C	-40~85°C
	Cooling method	Liquid cooling	Liquid cooling
	Dimensions	486L*427W*208H	655L*404.9W*239.5H
	Weight	≤ 40kg	≤ 40kg
	IP grade	IP67	IP67

# GVD500-32LZ



## Features

- Liquid cooling provides faster heat dissipation
- The fault protection mechanism is improved
- Support UDS with comprehensive testing and high reliability
- Suitable for logistics vehicles, buses, and passenger cars
- DCDC: 2.5kW/14V DC 178A

## Application



Coach



Logistics Truck



Sanitation Truck

Specification		
Function integration		2*DCAC+DCDC
Application		Coach, Logistics truck, Sanitation truck etc.
Input	High voltage	200-750V
	Low voltage	12V or 24V
Output (DCAC)	Power	Rated 5.5kW Peak 8.2kW
	Output current	Rated 13A Peak 19.5A (60S)
	Operating frequency	0-400Hz
System characteristic	Operating temperature	-40°C -85°C
	Cooling method	Liquid cooling
	Dimensions	384 W*290D*155H
	Weight	≤ 13kg
	IP grade	IP67

# GVD650-5L10-240/280



## Application



Medium/Heavy Truck

## Features

- Compatible with multiple power ranges, scalable from 240kVA to 280kVA, featuring ASC functionality
- Optionally equipped with bus Hall sensors for CAN network transmission
- Hardware over-voltage protection function
- Multiple wiring options, including dual input/output and single input/output;
- Support OTA
- Withstand random vibrations up to 6G and frequency sweep up to 3G

Specification		
Product module	GVD650-5L10-240	GVD650-5L10-280
Function integration	MCU	MCU
Application	Medium/Heavy truck	Medium/Heavy truck
Input	High voltage	400-750V
	Low voltage	12V or 24V
Output	Power	Rated 240kVA Peak 480kVA
	Output current	Rated 350A Peak 700A (60S)
	Operating frequency	0-600Hz
System characteristic	Operating temperature	-40°C -85°C
	Cooling method	Liquid cooling
	Dimensions	567W*540D*169H
	Weight	≤ 31 kg
	IP grade	IP67

## GVD500-41LT



### Application



Coach



Logistics Truck



Sanitation Truck

Medium/Heavy  
Truck

### Features

- Integration: Streamlined electrical design, compact size
- Reliability: EMC; protection rating, mechanical strength
- Low power loss: Power management, high-voltage intelligent distribution
- Control strategy: Simplified parameter dependency; diagnostic and fault classification
- Safety: Dual power control for power-assisted steering
- Environmental requirements: High and low temperature
- DCDC options available: 3kW, 4.5kW, 6kW

### Specification

Function integration		2*DCAC+DCDC+PDU
Application		Coach, Logistics truck, Sanitation truck, Medium/Heavy truck
Input	High voltage	200-750V
	Low voltage	12V or 24V
Output (DCAC)	Power	Rated 5.5kW Peak 8.2kW
	Output current	Rated 13A Peak 19.5A (60S)
	Operating frequency	0-400Hz
System characteristic	Operating temperature	-40°C -85°C
	Cooling method	Liquid cooling
	Dimensions	610W×433D×209H(mm)
	Weight	≤ 30kg
	IP grade	IP67

# GVD500-42LT



## Application



Logistics Truck



Sanitation Truck

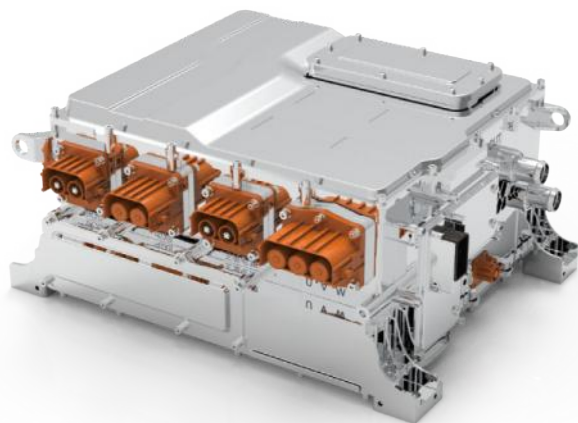
## Features

- Selection and application of automotive-grade components with various hardware and software protection features
- Independent wiring box structure design for secure and fast wiring
- High power density, compact product size, and versatile application
- Design of high protection and wide temperature range products to adapt to various harsh application environments
- Closed-loop control mode to meet functionalities such as active damping and active discharge
- DCDC: 3kW/27.5V DC 110A

Specification		
Function integration		2*DCAC+DCDC+PDU
Application		Logistics truck, Sanitation truck
Input	High voltage	200-750V
	Low voltage	24V
Output (DCAC)	Power	Rated 5.5kW Peak 7.5kW
	Output current	Rated 13A Peak 19.5A (60S)
	Operation frequency	0-400Hz
System characteristic	Operating temperature	-40°C -85°C
	Cooling method	Liquid cooling
	Dimensions	487W×382D×202H(mm)
	Weight	≤ 20kg
	IP grade	IP67



## GVD500-43LZ



## Features

- Comprehensive integrated distribution
- Strong scalability
- Robust fault protection mechanism (adhesion detection, HVIL)
- Modular design for convenient component replacement
- DCDC: 2.5kW/14V DC 178A

Specification		
Function integration		2*DCAC+DCDC+PDU
Application		Logistics truck, Sanitation truck
Input	High voltage	200-750V
	Low voltage	24V
Output (DCAC)	Power	Rated 5.5kW Peak 8.2kW
	Output current	Rated 13A Peak 19.5A (60S)
	Operating frequency	0-400Hz
System characteristic	Operating temperature	-40°C -85°C
	Cooling method	Liquid cooling
	Dimensions	495W*395D*230H
	Weight	≤ 25kg
	IP grade	IP67

## Application


**Logistics Truck**

**Sanitation Truck**



# ON-BOARD POWER SYSTEM

- GVD510 Series
- GVD570 Series

# GVD510-3AM3R0LD/3BM3R0LD



## Application



Light Truck



Coach

## Features

- Platformization: Multi-power stage shared chassis, flexible module configuration based on customer requirements
- Easy assembly: Small size, lightweight, flexible layout, and reduced assembly time
- High safety: Multiple fault diagnostics, comprehensive protection strategies for safer vehicle operation
- High reliability: IP67 protection, CAN network communication
- Rich functionality: Supports expanded UDS diagnostics, OTA, and other features.

Specification				
Products module			GVD510-3AM3R0LD	GVD510-3BM3R0LD
Function integration			DCDC	DCDC
Application			Light truck, Coach	Light truck, Coach
DCDC	Input	High voltage	200-450V	400-750V
		Low voltage	24V	24V
	Output	Power	Rated 3kw Peak 3.6kw	Rated 3kw Peak 3.6kw
		Output voltage	27.5V	27.5V
		Output current	Rated 110A Peak 130A	Rated 110A Peak 130A
	Efficiency	≥ 94%	≥ 94%	
System characteristic		Operating temperature	-40~80°C	-40~80°C
		Cooling method	Liquid cooling	Liquid cooling
		Dimensions	249.6mm×176.6mm×68.3mm	249.6mm×176.6mm×68.3mm
		Weight	≤ 6kg	≤ 6kg
		IP grade	IP67	IP67

# GVD510-11L1R5LD/22L1R5LD/2BL2R5LD



- Platformization: Multi-power stage shared chassis, flexible module configuration based on customer requirements
- Easy assembly: Small size, lightweight, flexible layout, and reduced assembly time
- High safety: Multiple fault diagnostics, comprehensive protection strategies for safer vehicle operation
- High reliability: IP67 protection, CAN network communication
- Rich functionality: Supports expanded UDS diagnostics, OTA, and other features.

Specification					
Products module			GVD510-11L1R5LD	GVD510-22L1R5LD	GVD510-2BL2R5LD
Function integration			DCDC	DCDC	DCDC
Application			Minivan		Minivan, Light truck
DCDC	Input	High voltage	200-450V	400-750V	400-750V
		Low voltage	12V		
	Output	Power	Rated 1.5kW Peak 1.8kW	Rated 1.4kW Peak 1.6kW	Rated 2.5kW Peak 3kW
		Output voltage	14V		
		Output current	Rated 107A Peak 128A	Rated 110A Peak 120A	Rated 178A Peak 210A
		Efficiency	≥ 92%	≥ 92%	92%
System characteristic	Operating temperature	-40~80°C			
	Cooling method	Liquid cooling			
	Dimensions	249.6mm×176.6mm×68.3mm			
	Weight	≤ 6kg			
	IP grade	IP67			

## Application

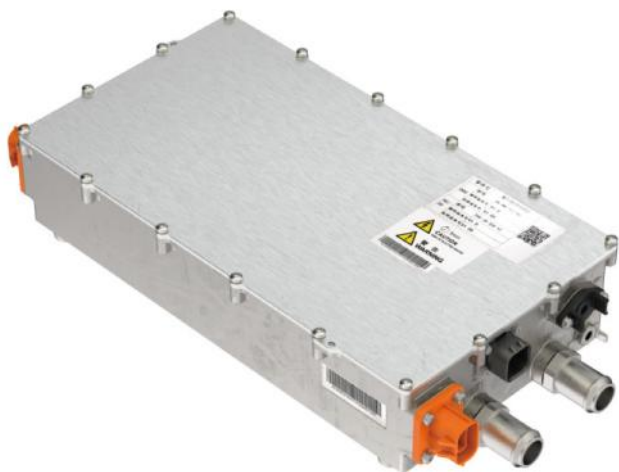


Light Truck



Minivan

# GVD510-1CM6R0LD



## Application



Heavy Truck



Hydrogen-fueled Vehicle

## Features

- Platformization: Multi-power stage shared chassis, flexible module configuration based on customer requirements
- Easy assembly: Small size, lightweight, flexible layout, and reduced assembly time
- High safety: Multiple fault diagnostics, comprehensive protection strategies for safer vehicle operation
- High reliability: IP67 protection, CAN network communication
- Rich functionality: Supports expanded UDS diagnostics, OTA, and other features.

Specification			
Function integration		DCDC	
Application		Heavy truck, Hydrogen-fueled vehicle	
DCDC	Input	High voltage	200-750V
		Low voltage	24V
	Output	Power	Rated 6kW Peak 6.6kW
		Output voltage	27.5V
		Output current	Rated 218A Peak 240A
Efficiency	≥ 94%		
System characteristic	Operating temperature	-40~85°C	
	Cooling method	Liquid cooling	
	Dimensions	442.9mm×210.6mm×82mm	
	Weight	≤ 8kg	
	IP grade	IP67	

## GVD570-P3R3L1R5LLL/ (2-in-1)



### Application


**Passenger Car**

**Minivan**

### Features

- Platformization: can be designed into standard boxes, power registration to cover the needs of minivans
- Flexible adaptation: Integrated PDU capable of adapting to batteries from different manufacturers, supporting various retrofitting needs
- High safety: Multiple fault diagnostics, comprehensive protection strategies for safer vehicle operation
- High reliability: 6g vibration resistance, IP67 protection, internal networking

Specification			
Products module		GVD570-P3R3L1R5LLL	
Function integration		DCDC+OBC	
Application		Passenger car, Minivan	
DCDC	Input	High voltage	200~450V
		Low voltage	12V
	Output	Power	Rated 1.5kW Peak 1.8kW
		Output voltage	14Vdc
	Output current	Rated 108A Peak 128A	
	OBC	Input	High voltage
Low voltage			12V
Output		Power	3.3kW
		Output voltage	200~450Vdc
	Max. output current	10A	
System characteristic	Operating temperature	-40~85°C	
	Cooling method	Liquid cooling	
	Dimensions	189W×281D×121H (mm)	
	Weight	≤ 10kg	
	IP grade	IP67	