

Global Leader in Innovative
Energy Solutions



ZD ENERGY

Robotic Product Catalog 2026

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About Us

Founded in 2010 and headquartered in Shanghai, ZHIDA TECH (ZD Energy) has grown to become the world's leading manufacturer of smart charging systems. As of September 2025, ZHIDA TECH (ZD Energy) has shipped over 2 million chargers to numerous regions across the globe, including Southeast Asia, Latin America, North America, the Middle East, and Europe.

ZHIDA TECH (ZD Energy) holds the highest market share in EV home charging globally and is partnered with 80% of global automotive OEMs - totalling over 70 car brands. ZHIDA TECH (ZD Energy) is committed to empowering the world's transition to electric mobility and green energy by specialising in intelligent charging & home energy solutions, which enable seamless communications between vehicle, home, grid, and charger.

The company is now strengthening its global presence by delivering products and services worldwide and establishing operational sites across Shanghai, Singapore, Hong Kong, Thailand, Qatar, Saudi Arabia, Germany, and Indonesia.



FA400A Charging Robot

APPLICATION SCENARIO

Industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Equipped with 6 active degrees of freedom, ensuring smooth movements and high operational efficiency
- > Supports scalability to ground rail or overhead rail systems for mobile gun-handling applications
- > Capable of serving “one vehicle, multiple connectors” configurations with a single robot
- > Delivers strong visual impact and presentation quality, ideal for demonstrations and exhibitions

TECHNOLOGY HIGHLIGHTS

Proprietary Monocular Vision Pose Recognition Algorithm

Replaces traditional dual-lens stereo cameras and structured light sensors with a single industrial camera, achieving precise spatial detection with simplified hardware and lower cost.

Innovative Trajectory Optimization Algorithm

Significantly enhances the plug-in and unplugging force of the robotic arm, improving both reliability and operational efficiency during the charging process.



SPECIFICATIONS

Weight	Overall weight	<150kg
Size	Overall Dimensions (L x W x H)	<600 x 600 x 1500mm
	Adaptable Charging Port Height Range	750-1200mm
	Arm Length	≥1350mm
Performance	Operating Temperature	-10°C ~ 45°C
	IP (Ingress Protection)	IP54
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 200mm Width Direction ± 200mm Height Direction 750-1200mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±5°
	Robotic Arm Degrees of Freedom	6
	Payload Capacity	10kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤60s
System Connectivity	Interfaces	Bluetooth/485/Ethernet/4G/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak≤2 kW, Average≤1 kW
	Operating Voltage	220V AC, 50 Hz



FA400B Charging Robot

APPLICATION SCENARIO

Industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Equipped with 6 active degrees of freedom, ensuring smooth movements and high operational efficiency
- > Supports scalability to ground rail or overhead rail systems for mobile gun-handling applications
- > Capable of serving “one vehicle, multiple connectors” configurations with a single robot
- > Delivers strong visual impact and presentation quality, ideal for demonstrations and exhibitions

TECHNOLOGY HIGHLIGHTS

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Replaces traditional dual-lens stereo cameras and structured light sensors with a single industrial camera, achieving precise spatial detection with simplified hardware and lower cost.

Innovative Trajectory Optimization Algorithm

Significantly enhances the plug-in and unplugging force of the robotic arm, improving both reliability and operational efficiency during the charging process.



SPECIFICATIONS

Weight	Overall weight	<150kg
Size	Overall Dimensions (L x W x H)	<600 x 600 x 1500mm
	Adaptable Charging Port Height Range	750-1200mm
	Arm Length	≥1350mm
Performance	Operating Temperature	-10°C ~ 45°C
	IP (Ingress Protection)	IP54
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 200mm Width Direction ± 200mm Height Direction 750-1200mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±5°
	Robotic Arm Degrees of Freedom	6
	Payload Capacity	10kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤60s
System Connectivity	Interfaces	Bluetooth/485/Ethernet/4G/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak ≤2 kW, Average ≤1 kW
	Operating Voltage	220V AC, 50 Hz



FA400C Charging Robot

APPLICATION SCENARIO

Industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Equipped with 6 active degrees of freedom, ensuring smooth movements and high operational efficiency
- > Supports scalability to ground rail or overhead rail systems for mobile gun-handling applications
- > Capable of serving “one vehicle, multiple connectors” configurations with a single robot
- > Delivers strong visual impact and presentation quality, ideal for demonstrations and exhibitions

TECHNOLOGY HIGHLIGHTS

Proprietary Monocular Vision Pose Recognition Algorithm

Replaces traditional dual-lens stereo cameras and structured light sensors with a single industrial camera, achieving precise spatial detection with simplified hardware and lower cost.

Innovative Trajectory Optimization Algorithm

Significantly enhances the plug-in and unplugging force of the robotic arm, improving both reliability and operational efficiency during the charging process.



SPECIFICATIONS

Weight	Overall weight	<150kg
Size	Overall Dimensions (L x W x H)	<600 x 600 x 1500mm
	Adaptable Charging Port Height Range	750-1200mm
	Arm Length	≥1350mm
Performance	Operating Temperature	-10°C ~ 45°C
	IP (Ingress Protection)	IP54
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 200mm Width Direction ± 200mm Height Direction 750-1200mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±5°
	Robotic Arm Degrees of Freedom	6
	Payload Capacity	10kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤60s
System Connectivity	Interfaces	Bluetooth/485/Ethernet/4G/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak ≤2 kW, Average ≤1 kW
	Operating Voltage	220V AC, 50 Hz



FS200B Charging Robot

APPLICATION SCENARIO

Airports, mines, steel plants, industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Reliable performance in complex, all-weather environments
- > Compact footprint — occupies just 0.22m of parking space
- > Highly compatible with various EV models and high-power fast chargers
- > Exceptional plug-in success rate: 99.9%+, with automatic recovery capability
- > Cost-effective solution with low maintenance requirements

TECHNOLOGY HIGHLIGHTS

Proprietary Rope-Driven Flexible Arm

Innovative patented design that reduces cost through environmental adaptability. Offers dust and water resistance with flexible instead of rigid connections, effectively compensating for vehicle movement during charging.

Self-Developed Monocular Vision Pose Recognition Algorithm

A core proprietary algorithm that uses a single camera to replace traditional dual-lens and structured light systems, achieving precise spatial recognition with lower hardware complexity.

Fully In-House Hardware Development

Includes independently developed robot controller, drive modules, and sensors for complete system integration and optimized performance.



SPECIFICATIONS

Weight	Overall weight	<200kg
Size	Overall Dimensions (L x W x H)	<1250 x 220 x 1600mm
	Adaptable Charging Port Height Range	800-1100mm
Performance	Operating Temperature	-20°C ~ 65°C (Customizable - 40°C ~ 65°C)
	IP (Ingress Protection)	IP65
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 120 mm Width Direction ± 120 mm Height Direction 800-1000mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	$\pm 3^\circ$
	Robotic Arm Degrees of Freedom	4
	Payload Capacity	30kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	$\geq 99.9\%$
	Maximum Matching Time	≤ 120 s
System Connectivity	Interfaces	Bluetooth/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak ≤ 1 kW, Average ≤ 500 W
	Operating Voltage	220V AC, 50Hz



FS200C Charging Robot

APPLICATION SCENARIO

Airports, mines, steel plants, industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Reliable performance in complex, all-weather environments
- > Compact footprint — occupies just 0.22m of parking space
- > Highly compatible with various EV models and high-power fast chargers
- > Exceptional plug-in success rate: 99.9%+, with automatic recovery capability
- > Cost-effective solution with low maintenance requirements

TECHNOLOGY HIGHLIGHTS

Proprietary Rope-Driven Flexible Arm

Innovative patented design that reduces cost through environmental adaptability. Offers dust and water resistance with flexible instead of rigid connections, effectively compensating for vehicle movement during charging.

Self-Developed Monocular Vision Pose Recognition Algorithm

A core proprietary algorithm that uses a single camera to replace traditional dual-lens and structured light systems, achieving precise spatial recognition with lower hardware complexity.

Fully In-House Hardware Development

Includes independently developed robot controller, drive modules, and sensors for complete system integration and optimized performance.



SPECIFICATIONS

Weight	Overall weight	<200kg
Size	Overall Dimensions (L x W x H)	<1350 x 330 x 1600mm
	Adaptable Charging Port Height Range	800-1100mm
Performance	Operating Temperature	-20°C ~ 65°C (Customizable - 40°C ~ 65°C)
	IP (Ingress Protection)	IP65
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 120mm Width Direction ± 120mm Height Direction 800-1000mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±3°
	Robotic Arm Degrees of Freedom	4
	Payload Capacity	30kg
	Visual Positioning Accuracy	0.1mm
System Connectivity	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤120s
	Interfaces	Bluetooth/Wi-Fi
Electrical Characteristics	Control	Remote Controller/Backend Platform
	Power Consumption	Peak ≤1kW, Average ≤500W
	Operating Voltage	220V AC, 50Hz



FS200D Charging Robot

APPLICATION SCENARIO

Airports, mines, steel plants, industrial parks, parking lots, bus charging stations, and autonomous vehicle charging sites

KEY FEATURES

- > Reliable performance in complex, all-weather environments
- > Compact footprint — occupies just 0.22m of parking space
- > Highly compatible with various EV models and high-power fast chargers
- > Exceptional plug-in success rate: 99.9%+, with automatic recovery capability
- > Cost-effective solution with low maintenance requirements

TECHNOLOGY HIGHLIGHTS

Proprietary Rope-Driven Flexible Arm

Innovative patented design that reduces cost through environmental adaptability. Offers dust and water resistance with flexible instead of rigid connections, effectively compensating for vehicle movement during charging.

Self-Developed Monocular Vision Pose Recognition Algorithm

A core proprietary algorithm that uses a single camera to replace traditional dual-lens and structured light systems, achieving precise spatial recognition with lower hardware complexity.

Fully In-House Hardware Development

Includes independently developed robot controller, drive modules, and sensors for complete system integration and optimized performance.



SPECIFICATIONS

Weight	Overall weight	<200kg
Size	Overall Dimensions (L x W x H)	<1350 x 260 x 1600mm
	Adaptable Charging Port Height Range	800-1100mm
Performance	Operating Temperature	-20°C ~ 65°C (Customizable - 40°C ~ 65°C)
	IP (Ingress Protection)	IP65
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 120mm Width Direction ± 120mm Height Direction 800-1000mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±3°
	Robotic Arm Degrees of Freedom	4
	Payload Capacity	30kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤120s
System Connectivity	Interfaces	Bluetooth/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak ≤ 1kW, Average ≤ 500W
	Operating Voltage	220V AC, 50Hz



MA400G Charging Robot

APPLICATION SCENARIO

Large-scale charging stations, multi-story parking garages, and parking lots (public or residential) where charging piles cannot be deployed

KEY FEATURES

- > Autonomous driving and self-navigation:
 - a. Fixed-route cruising
 - b. Autonomous navigation to the target parking space in public lots
- > Supports both “one robot with multiple connectors for one vehicle” mode and “multi-vehicle multi-con-nector” mode
- > Equipped with 6 active degrees of freedom, ensuring smooth movements and high operational efficiency
- > Optional energy storage integration (MA400GB)
- > Delivers strong visual impact and presentation quality, ideal for demonstrations and exhibitions

TECHNOLOGY HIGHLIGHTS

Proprietary Monocular Vision Pose Recognition Algorithm

Replaces traditional dual-lens stereo cameras and structured light sensors with a single industrial camera, achieving precise spatial detection with simplified hardware and lower cost.

Innovative Trajectory Optimization Algorithm

Significantly enhances the plug-in and unplugging force of the robotic arm, improving both reliability and operational efficiency during the charging process.



SPECIFICATIONS

Weight	Overall weight	<200kg
	Overall Dimensions (L x W x H)	<1300 x 700 x 1400mm
Size	Adaptable Charging Port Height Range	750-1200mm
	Arm Length	≥1350mm
Performance	Operating Temperature	-10°C ~ 45°C
	IP (Ingress Protection)	IP54
	Humidity	20%~95%
	Maximum Effective Operating Range	Length Direction ± 200mm Width Direction ± 200mm Height Direction 750-1200mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±3°
	Robotic Arm Degrees of Freedom	6
	Payload Capacity	10kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤60s
System Connectivity	Interfaces	Bluetooth/485/Ethernet/4G/Wi-Fi
	Control	Remote Controller/Backend Platform
Electrical Characteristics	Power Consumption	Peak≤2 kW, Average≤1kW
	Operating Voltage	220V AC, 50Hz
Mobility Parameters	Robot Travel Speed	30m/min
	Robot Turning Radius	≤1m
	Robot Navigation Method	Magnetic Stripe/ SLAM
	Minimum Ground Clearance	20mm



TECHNOLOGY HIGHLIGHTS

Proprietary Monocular Vision Pose Recognition Algorithm

Replaces traditional dual-lens stereo cameras and structured light sensors with a single industrial camera, achieving precise spatial detection with simplified hardware and lower cost.



Innovative Trajectory Optimization Algorithm

Significantly enhances the plug-in and unplugging force of the robotic arm, improving both reliability and operational efficiency during the charging process.

SPECIFICATIONS

Weight	Overall weight	<1.2t
	Overall Dimensions (L x W x H)	<1600 x 1000 x 1800mm
Size	Adaptable Charging Port Height Range	800-1100mm
	Arm Length	≥1350mm
Performance	Operating Temperature	-10°C ~ 45°C
	IP (Ingress Protection)	IP54
	Maximum Effective Operating Range	Length Direction ± 180mm Width Direction ± 180mm Height Direction 800-1100mm
	Maximum Yaw Angle Compatible with Vehicle Charging Port	±3°
	Robotic Arm Degrees of Freedom	6
	Payload Capacity	10kg
	Visual Positioning Accuracy	0.1mm
	Matching Success Rate	≥99.9%
	Maximum Matching Time	≤60s
	Interfaces	Bluetooth/485/Ethernet/4G/Wi-Fi
System Connectivity	Control	Remote Controller/Backend Platform
	Robot Travel Speed	30m/min
Electrical Characteristics	Robot Turning Radius	≤2.5m
	Robot Climbing Angle	<5°
	Robot Navigation Method	LiDAR/SLAM
	Minimum Ground Clearance	98mm
	Battery Capacity	60-90 kWh
Mobility Parameters	Battery Cycle Life	≥3000 cycles
	Maximum Discharge Power	≥60kW
	Energy Storage Battery Type	LFP
	Cooling Method	Liquid cooling
	Recharging Voltage	750V DC
	Recharging Current	≤120A
	Recharging Power	≤60kW
	Number of Charging Connectors	1
	Charging Interface and Protocol standards	GB/T
	Output Voltage	200-1000 V DC
Energy Storage Information	Output Current	≤120 A
	Output Power	≤60 kW
	Battery Pack SOC Lower Limit	10% (output disabled below this level)
Display Screen	Dimension	22-inch waterproof touchscreen
	Display Resolution	1080 x 1920

MA400GB Charging Robot

APPLICATION SCENARIO

Large-scale charging stations, multi-story parking garages, and parking lots (public or residential) where charging piles cannot be deployed

KEY FEATURES

- > Autonomous driving and self-navigation:
 - a. Fixed-route cruising
 - b. Autonomous navigation to the target parking space in public lots
- > Supports both “one robot with multiple connectors for one vehicle” mode and “multi-vehicle multi-connector” mode
- > Equipped with 6 active degrees of freedom, ensuring smooth movements and high operational efficiency
- > Optional energy storage integration (MA400GB)
- > Delivers strong visual impact and presentation quality, ideal for demonstrations and exhibitions



Core Technology – Monocular Camera

ZD Energy's proprietary monocular camera, when compared to other solutions, can significantly reduce costs while still meeting functional requirements.

Technology Highlights

> High Precision & Speed

Achieves 0.1 mm recognition accuracy and 10–30 second rapid identification; effectively resists environmental interference and minimizes the impact of wear or deformation of the vehicle-side charging port on insertion success.

> All-Weather Reliability

Capable of accurate spatial pose recognition under challenging conditions such as darkness (underground), rain, snow, and direct sunlight.

> Simple Structure & Easy Deployment

Compact design allows for quick installation and integration.

> Low Cost

Efficient and affordable hardware setup.

Global Leader in Charging Robots



> The first entrepreneurial team dedicated to intelligent charging, with over ten years of focus.

> Holds the world's largest number of IPs in automatic charging robots, including patents and standards.

> Offers the most diverse product lineup globally, covering eight major types of charging robots.

> Leads the world in real-world deployments across airports, mines, steel plants, parks, and parking lots.



> The only company with a self-developed rope-driven flexible arm, winner of China's top robot patent award.

> The only system achieving high-precision charging port localization via monocular vision, published in top SCI journals.

> The only automated charging robot maker with a dedicated automotive-grade production line.

World's First Autonomous Airport Logistics Commercial Project



Project Introduction:

- > 12 Robotic Chargers Charging Autonomous Vehicles to Transport Baggage.
- > 7*24 hour continuous outdoor operation scenario, each robot has an average of more than 20 charging cycles per day.
- > The only operating solution in Typhoon T8 weather conditions.