Kstar Electric Vehicle Charging System Solutions

KSTAR

Stock code: 002518

CONTACT
Tel: +86-755-21389008 Ext8508
Fax: +86-755-86168482
Website : www.kstar.com
E-mail: sales@kstar.com

HEADQUARTERS
Add: 4/F, No.1 Bldg.,Software Park, Keji C. Rd. 2nd, Hi-Tech Industrial Zone, Shenzhen 518057, P.R.China

FACTORIES ADDRESS
Kstar Industrial Park, Guangming Hi-Tech Industrial Zone, Shenzhen, P.R.China.
Kstar Industrial Park, Fumin Industrial Zone, Guanlan Town, Shenzhen, P.R.China.
Kstar Industrial Park, Zhongkai Hi-Tech Industrial Zone, Huizhou, P.R. China.

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Company profile

Shenzhen Kstar Science and Technology Co., Ltd. (stock code: 002518) (hereinafter referred to as "Kstar") was founded in 1993, and succeeded in landing A-share market in 2010. As a leading provider of integral solutions to key infrastructures in new-energy and data center, Kstar commits itself to R&D and manufacture of product line of electric vehicle charging system (DC charging piles, AC charging piles, solar assisted power solutions, energy storage solutions and monitoring, etc.), product line of key infrastructures in data center, product line of solar photovoltaic power generation system and distributed energy storage products as well as application and development of integrated solutions, and provides customers in more than 90 countries and region throughout the world with high-quality products and all-roundservices. By virtue of product advantages and high-quality services, Kstar has won major awards of the National High-tech Enterprises, National-recognized Enterprise Technology Centers, Key High-tech Enterprises under the National Torch Program, National Army Standard Certification Enterprises and National Technology Innovation Demonstration Enterprises, etc. in succession.

Service system

Kstar takes the lead in establishing a multilevel service system characterized by full coverage, reasonable layout and closing to customers under the framework of "national customer service center-regional technical support centers-provincial and regional after-sales service centers-regional service centers", and provides customers with 7×24h reliable services.

Website: www.kstar.com

Customer service hotline: 400-700-9662

KSTAR Industrial Park at Zhongkai Hi-Tech Zone, Huizhou, China

KSTAR Industrial Park at Guanlan Fuyuan industrial Zone,Shenzhen,China

KSTAR Industrial Park at Guangming Hi-Tech Zone, Shenzhen, China

Strategic cooperation partners

State Grid · China Southern Power Grid · CHINA TOWER · Winnerway · SUNWIN · BYD · Skywell · Nanjing Public Transport · Nantong Public Transport · Sun Yat-sen Mausoleum Scienic Spot · Xuanwu Lake Scienic Spot

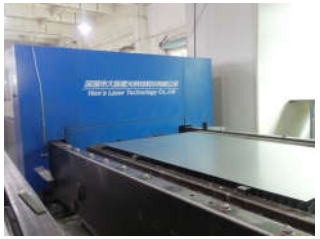
Petrochina · SINOPEC · New Olympic investment · China Gas · Yaxing Bus · NISSAN · Baicheng Bus · NS-TEXENG · Jinan Municipal Government · Huazhu Hotels Group · Jintian New Energy · Seika Trade

Assembly workshop of DC charging piles

Assembly workshop of AC charging piles

Assembly workshop of modules

CNC production line



Laser cutting machine

Welding robot

SMT production line

Plugin production line

Automatic optical detection line

Whole machine test area

Module aging line

Module test line

EMI laboratory (for measurement of RE radiated interference)

Environmentally compatible laboratory

Waterproof laboratory

Overall Solutions

On account of the leading R&D strength and integral industrial chain manufacturing base in new energy industry, Kstar provides customers with integrated solutions to charging systems of new-energy electric vehicles including charging system, distribution system, energy storage system, measuring and control system, security system and solar energy products.

Photovoltaic & wind power

Photovoltaic generation Wind Power generation

Grid-connected photovoltaic
Grid-connected wind power

Distribution system

Distribution transformers
Medium and low-voltage switch cabinets
Active filters
AC/DC control power supplies

Energy storage system

Electric energy storage
Electric energy release
Charge management
Battery distribution

Charging system

AC chargers
DC chargers
Separate box charge
Charge/discharge management

Measuring and control devices

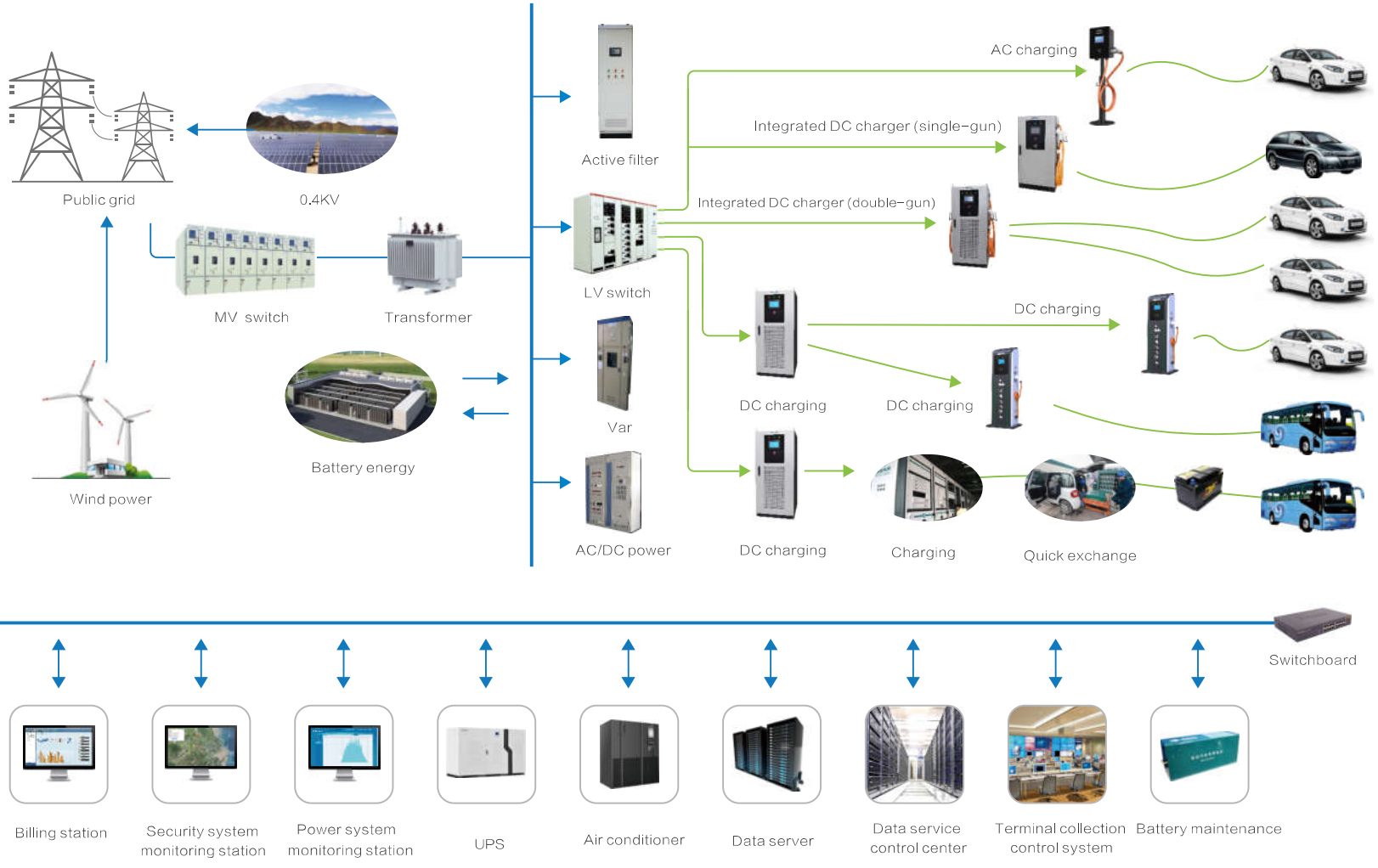
Data service
Communication management
Power supply and distribution management
Security management

Ancillary facilities

Lighting equipment
Water supply and discharge equipment
Firefighting equipment
Other infrastructures

Operation management

Billing management
Vehicle scheduling and management
APP application
Maintenance and service



The AC charging products provide AC charging power supply for electric vehicles by means of advanced embedded control technology, and exhibit multiple charging modes and intelligent management and comply with the latest national charging standards. The AC charging products have the functions of overcurrent protection, short-circuit protection, leakage protection and emergency stop, etc. The friendly HMI is characterized by simple and convenient use, strong applicability to environment, stability and reliability. With the features of simple operation, convenient and reliable use, and small floor area, the AC charging pile products are mainly applied in the places of small floor space including the existing garages and parking lots, etc.

Single-phase AC charging pile

◆ Display modes

Friendly visual operation, display of multiple information, prompt information, IC car information and charge related information.

◆ Billing management

The electric energy collection system and billing system provide accurate consumption data, and payment can be made by means of IC card, mobile phone APP, Alipay and WeChat, etc.

◆ Automatic stop and fault indication

During charge of electric vehicles, batteries stop automatically after full charge, and remind users in the mode of indicator lamp. When undervoltage, overcurrent, short-circuit, leakage and connection faults occur, charging piles stop automatically, and alarm through indicator amp.

◆ Strong compatibility

Charge is compatible with all new energy electric vehicles that comply with the national standards, and double charging guns when connected are compatible with the electric vehicles in compliance with different interface standards such as European standards and American standards, etc.

◆ High reliability

Industrial grade design, good thermal adaptability, long service life, and IP54 protective class.

◆ Installation methods

Floor type: equipped with columns; wall-mounted: equipped with holders; and integrated floor type

Technical indicators

Model	EVA-07-220
Input voltage	AC220V ± 15%
Scope of AC frequency	50 / 60Hz ± 10%
Output voltage	AC220V ± 15%
Maximum output current	32A
Insulating property	≥10MΩ (output-enclosure)
Protection functions	Input overvoltage, undervoltage, overcurrent, short circuit, leakage and output current limit, etc.
Communication interfaces	Ethernet communication, 3G, 4G, Wifi and GPRS
Operating environment	Altitude ≤2000m, temperature -20~50℃ and humidity 95%
Reliability	MTBF≥100000Hrs
Dimensions (W×D×H) mm	300*130*420 (wall-mounted) 360*300*1470 (floor type) 280*280*1050 (column components)
Weight	10kg / 18kg / 64kg

Three-phase AC charging pole

◆Display modes

Friendly visual operation, display of multiple information, prompt information, IC car information and charge related information

◆Control modes

Multiple charging modes: automatic charge, charge based on battery level, charge based on amount and charge based on time

◆Billing management

The electric energy collection system and billing system provide accurate consumption data, and payment can be made by means of IC card, mobile phone APP, Alipay and WeChat, etc.

◆Automatic stop and audible/visual alarm

During charge of battery banks by matching on-board chargers, the equipment stops automatically and reminds through light when any of charging time and charging capacity satisfies the requirements; when overvoltage, overcurrent and connection faults occur to chargers, the equipment stops automatically, enters the protection state, displays fault contents and issues audible/visual alarm.

◆Power down memory function

After power down all records are not lost, and charge can be resumed after re-energization.

◆High reliability

Industrial grade design, good thermal adaptability, long service life, and IP54 protective class.

◆Installation methods

Floor type: equipped with columns; wall- mounted: equipped with holders; and integrated floor type

Technical indicators

Model	EVA-42-380
Input voltage	AC380V ± 15%
Scope of AC frequency	50 / 60Hz ± 10%
Output voltage	AC380V ± 20%
Maximum output current	63A
Insulating property	≥10MΩ (output-enclosure)
Protection functions	Input overvoltage, undervoltage, overcurrent, short circuit, leakage and output current limit, etc.
Communication interfaces	Ethernet communication, 3G, 4G, Wifi and GPRS
Operating environment	Altitude ≤2000m, temperature -20~50℃ and humidity 95%
Reliability	MTBF≥100000Hrs
Dimensions (W×D×H) mm	470*180*610 (wall-mounted) 460*300*1600 (floor type) 280*280*1050 (column components)
Weight	35kg / 45kg / 90kg

AC Pile & Advertising Machine

The AC pile & advertising machine is a product integrating charging pile and advertising machine, and in technical parameters the video play function on advertising screen is added on the basis of 7KW enhanced AC charging piles, which can not only charge new energy vehicles, but also display advertisements online to serve multiple purposes; and exhibit clear picture quality and powerful stereoscopic impression. The AC pile & advertising machine can be placed in parking lots in public areas including residential communities of commercial buildings, etc., and the whole network can be managed uniformly.

1. LG32" display screen with luminance up to 1500nit and design life of 50000H is adopted;
2. Highlight display screen is clearly visible in the sun at 178° visual angle;
3. Display screen is equipped with automatic photosensitive system, which can change the luminance of display screen according to ambient light;
4. Background server can control the contents (both local videos and network videos) played on the screen remotely;
5. Background server can control play of multiple machines simultaneously (separate play or simultaneous play).

◆ Display modes

Friendly visual operation, display of multiple information, prompt information, IC car information and charge related information

◆ Billing management

The electric energy collection system and billing system provide accurate consumption data, and payment can be made by means of IC card, mobile phone APP, Alipay and WeChat, etc.

◆ Automatic stop and fault indication

During charge of electric vehicles, batteries stop automatically after full charge, and remind users in the mode of indicator lamp. When undervoltage, overcurrent, short-circuit, leakage and connection faults occur, charging piles stop automatically, and alarm through indicator lamp.

◆ Strong compatibility

Charge is compatible with all new energy electric vehicles that comply with the national standards, and double charging guns when connected are compatible with the electric vehicles in compliance with different interface standards such as European standards and American standards, etc.

◆ High reliability

Industrial grade design, good thermal adaptability, long service life, and IP54 protective class

◆ Installation methods

Integrated floor type

Technical indicators

Model	EVA-07-220
Input voltage	AC220V ± 15%
Range of AC frequency	50 / 60Hz ± 10%
Output voltage	AC220V ± 15%
Maximum output current	32A
Insulating property	≥10MΩ (output-enclosure)
Protection functions	Input overvoltage, undervoltage, overcurrent, short circuit, leakage and output current limit, etc
Communication interfaces	Ethernet communication, 3G, 4G, Wifi, GPRS and bluetooth
Operating environment	Altitude ≤2000m, temperature -20~50℃ and humidity 95%
Reliability	MTBF≥100000Hrs
Dimensions (W×D×H) mm	750*400*1830
Weight	126kg

Mobile DC Charger

As an intelligent charging product integrating the functions of charging cabinet, charging pile and distribution system, etc. the mobile DC charger is mainly used for quick boosting charge in emergencies and applicable to road rescue of new energy vehicles as well as large buses and logistic vehicles. The whole charger is portable and flexible without need of the fixed installation site. The mobile DC charger achieves main functions of man-machine interaction, swiping card, billing, monitoring and communication, etc. in the minimum equipment space.

◆ Fully automatic charge by swiping card

◆ High protective class and complete protection functions

◆ Wide range of output voltage, applicable to various vehicle models

◆ Suitable for independent and decentralized installation with small floor area and without need of special ancillary facilities

◆ Small harmonic components for greening and environmental protection

◆ Safe, reliable and unattended

Technical indicators

Model and specification	EVD20-15/30		EVD20-20/40
Power of single module	15KW		20KW
Power	15/30		20/40
Output voltage	DC200~500V	DC300~750V	DC200~750V
Output current	0~60A	0~40A	0~60A
Input voltage	AC380 ± 15%		
Output ripple factor	≤1%		
Stabilized voltage precision	≤ ± 0.5%		
Stabilized current precision	≤ ± 1%		
Working efficiency	≥95.5%		
Number of containable modules	2		
Number of output interfaces	1		
Safety protection	Insulation resistance ≥10MΩ, withstand voltage 2500VAC, protective class: IP54		
Cooling mode	Intelligent air cooling		
Communication interfaces	Ethernet communication, 3G, 4G and Rs485		
Operating environment	Altitude ≤2000m, ambient temperature -30℃ ~ 65℃, and humidity: 95%		
Reliability	MTBF≥100000Hrs		
Dimensions (W×D×H) mm	350*700*695		
Weight	50kg		

DC Charging Product/Integrated Charger

As an integrated DC charging product integrating the functions of charging cabinet, charging pile and distribution system, etc. the intelligent quick charger achieves main functions of man-machine interaction, swiping card, billing, monitoring and communication, etc.

- Support payment by means of IC card, APP, Alipay, WeChat and UnionPay card, etc
- High protective class and complete protection functions
- Wide range of output voltage, applicable to various vehicle models
- Suitable for independent and decentralized installation with small floor area and without need of special ancillary facilities
- Double-gun system with the intelligent load distributing function and powerful charging compatibility can charge two electric vehicles and supports multiple charging modes including equalized charging, alternative charging and intelligent charging
- Protection functions: overcurrent protection, overvoltage protection, overtemperature protection, short-circuit protection, output reverse polarity protection, leakage protection and insulation monitoring protection
- Display functions: voltage display, current display, battery indicator, state display and SOC display

Integrated DC quick charger (small volume)

Integrated DC quick charger (standard volume)

Technical indicators

Integrated DC quick charge (small volume)

Model and specification	EVD20-15/30/45/60		EVD20-20/40/60/80
Power of single module	15KW		20KW
Power	15/30/45/60KW		20/40/60/80KW
Output voltage	DC200~500V	DC300~750V	DC200~750V
Output current	0~120A	0~80A	0~120A
Input voltage	AC380±15%		
Output ripple factor	≤1%		
Stabilized voltage precision	≤±0.5%		
Stabilized current precision	≤±1%		
Working efficiency	≥95.5%		
Number of containable modules	4		
Number of output interfaces	1/2		
Safety protection	Insulation resistance ≥10MΩ, withstand voltage 2500VAC, protective class: IP54		
Cooling mode	Intelligent air cooling		
Communication interfaces	Ethernet communication, 3G, 4G and RS485		
Operating environment	Altitude ≤2000m, ambient temperature -30℃~65℃, and humidity: 95%		
Reliability	MTBF≥100000Hrs		
Dimensions (W×D×H) mm	700*380*1250		
Weight	80kg		

Integrated DC quick charge (small volume)

Model and specification	EVD20-60/75/90/105/120/135/150		EVD20-80/100/120/140/160/180/200
Power of single module	15KW		20KW
Power	60/75/90/105/120/135/150KW		80/100/120/140/160/180/200KW
Output voltage	DC200~500V	DC300~750V	DC200~750V
Output current	0~300A	0~200A	0~300A
Input voltage	AC380±15%		
Output ripple factor	≤1%		
Stabilized voltage precision	≤±0.5%		
Stabilized current precision	≤±1%		
Working efficiency	≥95.5%		
Number of containable modules	10		
Number of output interfaces	1/2		
Safety protection	Insulation resistance ≥10MΩ, withstand voltage 2500VAC, protective class: IP54		
Cooling mode	Intelligent air cooling		
Communication interfaces	Ethernet communication, 3G, 4G and RS485		
Operating environment	Altitude ≤2000m, ambient temperature -30℃~65℃, and humidity: 95%		
Reliability	MTBF≥100000Hrs		
Dimensions (W×D×H) mm	675*870*1515		
Weight	195kg		

DC Charging Product/Integrated Four-gun Charge

As an integrated DC charging product integrating the functions of charging cabinet, charging pile and distribution system, etc. the intelligent quick charger achieves main functions of man-machine interaction, swiping card, billing, monitoring and communication, etc.

- Support payment by means of IC card, APP, Alipay, WeChat and UnionPay card, etc
- High protective class and complete protection functions
- Wide range of output voltage, applicable to various vehicle models
- Suitable for independent and decentralized installation with small floor area and without need of special ancillary facilities
- Protection functions: overcurrent protection, overvoltage protection, overtemperature protection, short-circuit protection, output reverse polarity protection, leakage protection and insulation monitoring protection
- Display functions: voltage display, current display, battery indicator, state display and SOC display
- Manual switching between 12V and 24V of auxiliary power supplies
- One charger with four guns with intelligent distribution of power, any single gun can output at full power, double guns and four guns can output average power

Technical indicators

Integrated four-gun DC quick charger (standard volume)

Model and specification	EVD20-60/75/90/105/120		EVD20-80/100/120/140/160
Power of single module	15KW		20KW
Power	60/75/90/105/120KW		80/100/120/140/160KW
Output voltage	DC200~500V	DC300~750V	DC200~750V
Output current	0~240A	0~160A	0~240A
Input voltage	AC380±15%		
Output ripple factor	≤1%		
Stabilized voltage precision	≤±0.5%		
Stabilized current precision	≤±1%		
Working efficiency	≥95.5%		
Number of containable modules	8		
Number of output interfaces	4		
Safety protection	Insulation resistance ≥10MΩ, withstand voltage 2500VAC, protective class: Ip54		
Cooling mode	Intelligent air cooling		
Communication interfaces	Ethernet communication, 3G, 4G and Rs485		
Operating environment	Altitude ≤2000m, ambient temperature -30℃~65℃, and humidity: 95%		
Reliability	MTBF≥100000Hrs		
Dimensions (W×D×H) mm	675*870*1515mm		
Weight	195kg		

DC Charging Product / Split Charger

The split DC charging product is an intelligent charging system composed of two parts, i.e. DC conversion and DC output control in split type, and two parts make up a complete charger through DC cables to fulfill main functions of man-machine interaction, swiping card, billing, monitoring and communication, etc.

- Support payment by means of IC card, APP, Alipay, WeChat and UnionPay card, etc
- High protective class and complete protection functions
- Wide range of output voltage, applicable to various vehicle models
- Expandable capacity in the form of combining cabinets
- Small harmonic components for greening and environmental protection
- Safe, reliable and unattended
- The system with the intelligent load distributing function and powerful charging compatibility can charge two electric vehicles and supports multiple charging modes including equalized charging, alternative charging and intelligent charging

Technical indicators

Model and specification	EVD20-120/160/200		
Power of single module	15KW	20KW	
Number of containable modules	10		
Output voltage	AC380±15%		
Output current	DC200~500V	DC300~750V	DC200~750V
Input voltage	0~300A	0~200A	0~270A
Output ripple factor	≤1%		
Stabilized voltage precision	≤±0.5%		
Stabilized current precision	≤±1%		
Working efficiency	≥95.5%		
Number of containable modules	150KW	200KW	
Number of output interfaces	1~10		
Safety protection	Insulation resistance ≥10MΩ, withstand voltage 2500VAC, protective class: Ip54		
Cooling mode	Intelligent air cooling		
Communication interfaces	Ethernet communication, 3G, 4G and Wifi		
Operating environment	Altitude ≤2000m, ambient temperature -30℃~65℃, and humidity: 95%		
Reliability	MTBF≥100000Hrs		
Dimensions (W×D×H) mm	Main cabinet: 600*870*1515mm; terminal: 360*300*1470mm		
Weight	Main cabinet: 180kg; terminal: 64kg		

Charging Modules

EVD－15－(500) 750－RM/EVD-20-750-RM AC/DC conversion module is a high-efficiency and high-power density AC-DC charging module with the characteristics of perfect input over/undervoltage protection, output reverse polarity protection, output overvoltage protection, output overcurrent protection, short-circuit protection and overtermperature protection, etc.

- Range of operating voltage: 323Vac~437Vac
- High protective class and complete protection functions
- Wide output voltage applicable to various vehicle models
- Working efficiency ≥96.4%
- Small harmonic components for greening and environmental protection
- Weight: ＜11kg
- Support hot swappable
- Range of operating temperature: -40℃~60℃

15kW DC charging module

20kW DC charging module

Technical indicators

15kW constant power DC charging module

Model	EVD15H-750-RM
Input voltage (Vac)	380
Variable range of input voltage (Vac)	323~437
Input power factor	＞0.99
Harmonic components in input current	＜±5%(50%~100%)
Variation range of input frequency (Hz)	45~65
Output rated voltage (V)	750
Variable range of output voltage (V)	200~750
Output rated current (A)	20
Variable range of output current (A)	0~37.5
Output stabilized voltage precision	＜±0.5%
Output stabilized current precision	≤1%(20%~100%Ir)
Sharing current	＜±5%Ir
Output ripple	Peak factor ＜ 1%, RMS factor ＜ 0.5%
Standby power consumption (W)	＜15
Communication bus protocol	CAN2.0
Maximum efficiency	95.80%
Audio-frequency noise (dB)	55
Dimensions (W×D×H) mm	531*240*87mm

Technical indicators

15kW DC charging module

Model	EVD-15-500-RM	EVD-15-750-RM
Input voltage	AC380±15%	
Output current	DC200～500V	DC300～750V
Output ripple factor	0～33.3A (rated value 30A)	0～22.5A (rated value 20A)
Output ripple factor	≤0.1%	
Stabilized voltage precision	≤±0.5%	
Stabilized current precision	≤±1%	
Working efficiency	≥96.4%	
Protection functions	Input undervoltage protection, output reverse polarity protection, output overcurrent protection, output short-circuit protection and anti-reverse filling protection	
Standby power consumption	≤14W	
Current limiting function	Yes	
Cooling mode	Intelligent air cooling	
Communication interfaces	CAN	
Operating environment	Altitude ≤4000m, ambient temperature -40℃～70℃, and humidity: 95%	
Reliability	MTBF≥500000Hrs	
Dimensions (W×D×H) mm	481*240*87mm	
Weight	11kg	

20kW DC charging module

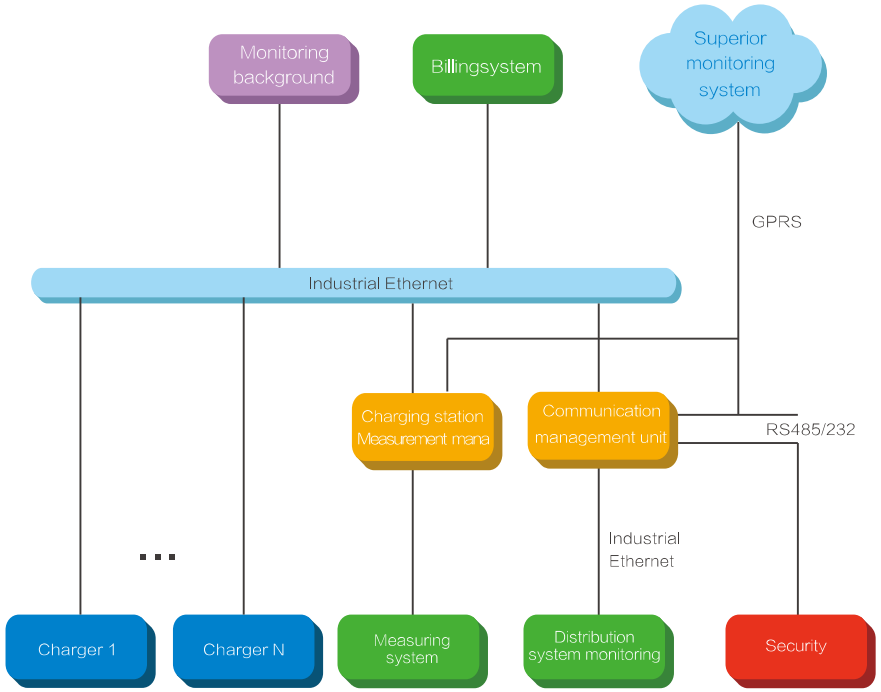
Model	EVD-20-750-RM
Input voltage	AC380±15%
Output voltage	DC200～750V
Output current	0～30A (rated value 27A)
Output ripple factor	≤0.1%
Stabilized voltage precision	≤±0.5%
Stabilized current precision	≤±1%
Working efficiency	≥96.4%
Protection functions	Input undervoltage protection, output reverse polarity protection, output overcurrent protection, output short-circuit protection and anti-reverse filling protection
Standby power consumption	≤14W
Current limiting function	Yes
Cooling mode	Intelligent air cooling
Communication interfaces	CAN
Operating environment	Altitude ≤4000m, ambient temperature -40℃～70℃, and humidity: 95%
Reliability	MTBF≥500000Hrs
Dimensions (W×D×H) mm	481*240*87mm
Weight	11kg

Kstar EVM-Ⅲ series monitoring system

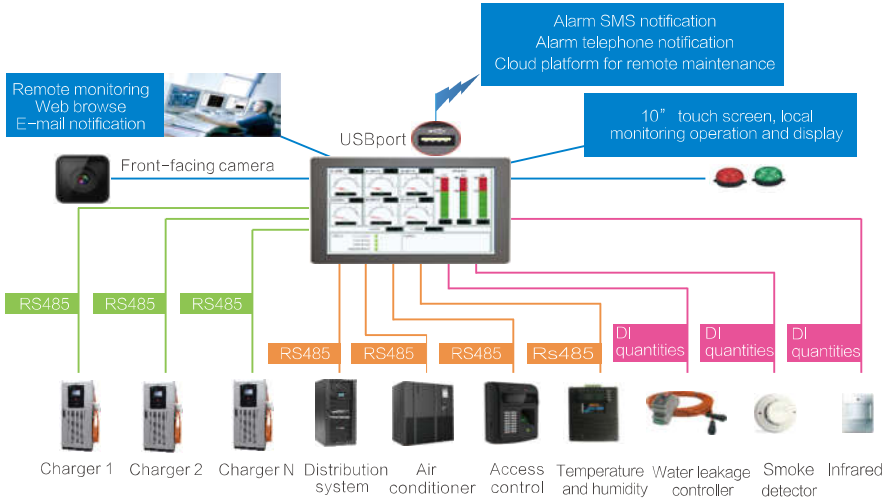
The Kstar EVM-Ⅲ series monitoring system is an integrated management platform for automatic monitoring of all subsystems including charge, distribution, photovoltaic, energy storage, dynamic environment, measurement and security, etc. Perfect HMI and simple and convenient use can realize automatic operation management of charging station.

General

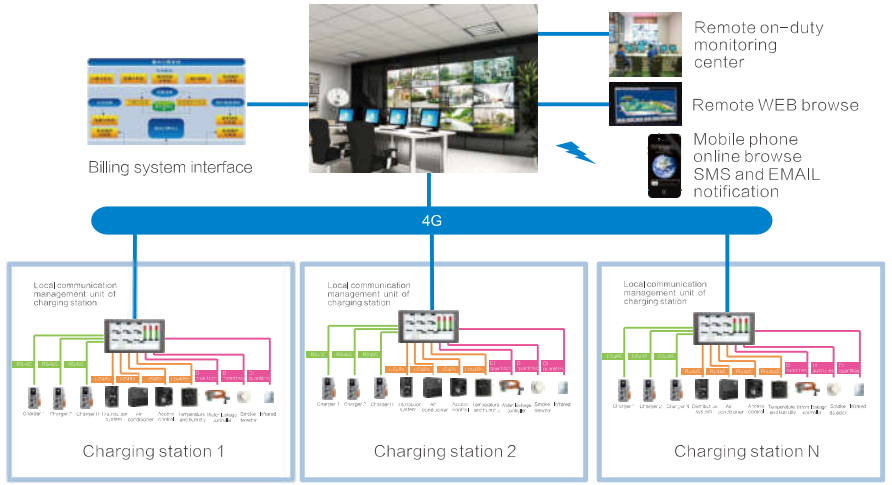
As the core of automation system of charging station, the monitoring system is mainly composed of charging station monitoring background, charger control system, distribution system monitoring, measuring and billing system, security system and communication management unit, etc., and its structure is shown in figure below.



Structure diagram of charging station monitoring system



Monitoring system diagram of charging station



Monitoring system diagram of urban charging station

Monitoring system

Display forms of multi-data analysis
for control and analysis of the operating conditions of networks at any time

Product features

- 7 × 24h on-duty
- Pre-warning function
- Visit at anytime and anywhere
- Daily, weekly, monthly and yearly reports
- Remote reports of equipment experts
- Accident tracing reports
- Knowledge and expert database
- Lower maintenance costs and higher availability

Appearance of charging station displayed by 3D view, as if observing charging station on the scene so as to find out the area with alarm in time

Project cases

Shenzhen Guangming New City Park(domestic case)

Shenzhen Guangming Library (domestic case)

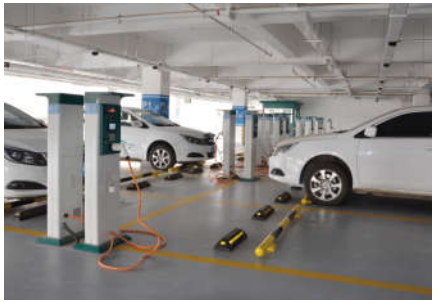
Charging station of Shenzhen Guangming Administrative Committee (domestic case)

Nanjing Taiyanggong parking lot (domestic case)

Parking lot at Nanjing Sun Yat-sen Mausoleum (domestic case)

Underground parking lot at Nanjing Innovation Science Park (domestic case)

Charging station at Lanzhou Airport (domestic case)



Lanzhou car-sharing charging station (domestic case)

Taiyuan taxi charging station (domestic case)

Yanji Public Transport Group (domestic case)

Anda public transport system (domestic case)

Jiangsu Yancheng public transport(domestic case)

Xincheng Science Park building (domestic case)

Parking lot in Zhonghai Community, Jiangsu (domestic case)

Application field of electric vehicles in Japan (overseas case)

Certificate of Key High-tech Enterprises under the National Torch Program

National-recognized Enterprise Technology Centers

National Technology Innovation Demonstration Enterprises

Post-doctoral Research Station

A-share listed enterprise

Certificate of ISO9001 Quality Manag ement System

Certificate of ISO14001 Environmental Management System

Certificate of OHSAS18001 Occupational Heath and SafetyManagement System

Certificate of IECQ QC080000 Hazardous Substance Process Management System

Test certificate of charging pile products

CQC certificate

Test report of Ketop Lab

Test report of Electric Power Research Institute

Test and certification of charging pile products

Test and certification of charging pile products