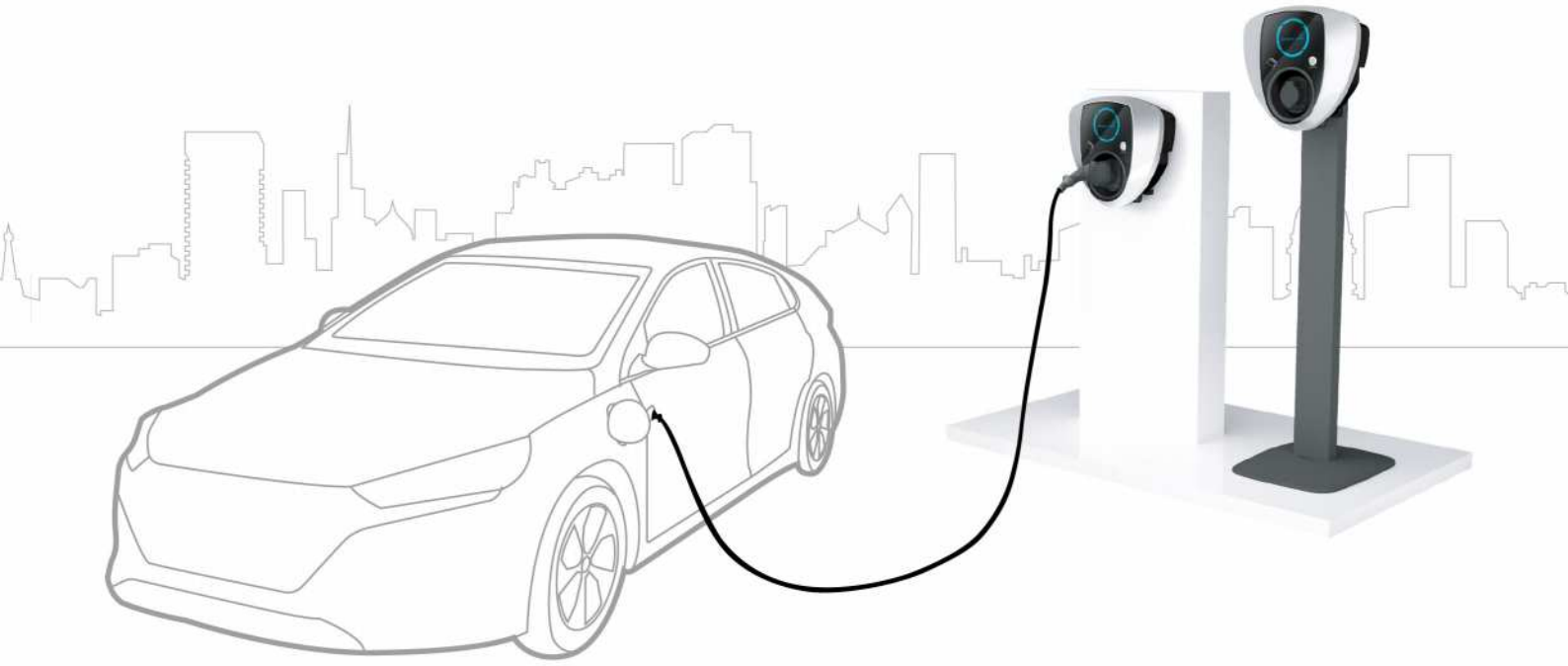
JoongAng Control

Advanced EV Charging Solution

& Smart Green Home and Building

INTELLIGENT BUILDING AND HOME NETWORK SYSTEM WITH EV CHARGING SOLUTION



Eestablished in 1987, JoongAng Control Co., Ltd. is a leader in the development and manufacture of electric vehicle charging infrastructure. JoongAng Control Co., Ltd. has been advancing the EMS-connected charging platform business as an integrated solution for charging electric vehicles based on the automatic building control technology.

EV CHARGER

DC Charger

High Power DC Charging System

Electric Bus Charger

AC Charger

AC Home Charger

Built-in Charger

BUSINESS AREA

PRIVATE CHARGING INFRASTRUCTURE BUSINESS

- EVS membership service business
- Premium counseling service

INTEGRATED TOTAL PLATFORM ESTABLISHMENT SERVICE

- Design charging platform connected with EMS electric power network
- Establish new generative energy-connected charging system

ELECTRIC VEHICLES CHARGING FACILITIES

- Business for establishing private and public charging infrastructure
- Business for establishing private home charger

BUSINESS FOR SHARING HOME CHARGER

- Create new business through sharing service business

AC Home Charger (Wall mounted type)

Easy to Install | Easy to Use | The Safest | Multi Standard | ECO Friendly

JC-6511JA-B-B/C-R1

- Quick read status LED indicators
- Intuitive user interface
- Simple and luxurious design
- Compatible with all electric vehicles

JC-6511HD-M-C

- Home charger for Hyundai Ionic EV
- Simplicity, Future-Oriented Customer design
- Segment indicator (Charging time, status)

iF DESIGN AWARD 2017

Application

Designed to be installed (both indoor and outdoor) at private houses, communal blocks, workplaces and car parks.

Features

- Highest level of safety available
- Temperature sensor embedded in coupler Patent obtained (No. 10-1996603)
- Intuitive user interface
- Control by APP
- Quick read status LED indicators
- RFID for user authentication
- Simply plug-in and charge
- Highest quality "Made in Korea"

JC-6511PS-PO-BC

- Model reflecting characteristics of home appliances in the clean white design for the first time
- Developed the model in HEMS/BEMS connected configuration

JC-6511B

- Home charger for BMW i3/i8
- Joint development of brand-oriented home charger for the first time in Korea (BMW Korea)
- Distributed integrated charger for the first time in Korea (released)
- Awarded with home charger design prize for the first time in the world "iF design prize in 2015"

iF DESIGN AWARD 2015
The world's first electric car charger division IF design award

Item	AC Home Charger			
Model	JC-6511JA-B-B/C-R1	JC-6511HD-M-C	JC-6511B	JC-6511PS-B-PO-BC
Input	Single Phase 220VAC, 50/60Hz, 7.4kVA			
Output	Single Phase 220VAC, 50/60Hz, 7kW			
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)			
User interface	LED (Charge time, electricity, fare)	Blue LED Dimming (Indicate charging time and charged status)	Blue LED Dimming	LCD (Electricity, time, fare)
User authorization	RF Card			
Protection grade	IP54			
Certifiction	KC authorized			
Size	353(W)×337(H)×146(D)mm	406(W)×494(H)×185(D)mm	376(W)×630(H)×180(D)mm	390(W)×560(H)×162.4(D)mm

AC Charger (Stand type)

Application

Designed to be installed at car parks, communal blocks and workplaces.

Features

- Highest level of safety available
- Stand type or Wall type can be selected
- Intuitive user interface
- Display charge status information
- RFID for user authentication

JC-6111-P-BC

JC-6111B

JC-6111, 6112

JC-6511JA-P-BC

Item	AC Charger			
Model	JC-6111JA-P-BC JC-6511JA-P-BC (Wall Mount)	JC-6111B	JC-6111	JC-6112
Input	Single Phase 220VAC, 50/60Hz, 7.4kVA			Single phase 220VAC, 50/60Hz, 15kVA
Output	Single Phase 220VAC, 50/60Hz, 7kW			Single phase 220VAC 50/60Hz, 14kW (two-channel simultaneous charging)
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)			
User interface	7" or 8" LCD Touch Screen (U/I)		7" or 8" LCD Touch Screen (U/I)	
User authorization	RF Card or Password (Option : Interworking with hom network systems)			
Protection grade	IP54			
Certifiction	KC authorized			
Size	400(W)×1.476(H)×330(D)mm			

Built–in Charger

Application

- Private enterprise
- Parking garage
- RS485, RS232, ethernet communication
- EV infrastructure service providers
- East to use
- RFID autorization

Features

- Support multiple standards AC J1772 Type 1
- Simple and easy installation
- Daylight readable touch screen display
- Customizable
- Simultaneous charging function (18kW)
- Voice support

JC–6513–BI–BBE

The charger's built–in like furniture

- Minimum footprint
- Creating a comfortable parking environment
- Charging up to 3 vehicles simultaneously

Item	Built–in Charger		
Model	JC–6513–BI–BCE (3ch)	JC–6512–BI–BC (2ch)	JC–6511–BI–BC (1ch)
Input	3P4W, 380VAC, 50/60Hz, 80A, 18kVA		
Output	AC 220V, 32A, 7kW (B–Type) 1ch & AC 220V, 32A, 7kW (C–Type) 1ch & AC 220V, 16A, 3.5kW (Concent–Type) 1ch	AC 220V, 32A, 7kW (B–Type) 1ch & AC 220V, 32A, 7kW (C–Type) 1ch	AC 220V, 32A, 7kW (B–Type) 1ch or AC 220V, 32A, 7kW (C–Type) 1ch
Environment condition	Temperature : –25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)		
User interface	8" LCD		
User authorization	RF Card		
Protection grade	IP54		
Size	536(W) x 411(H) x 173(D)mm		

DC Charger (100kW, 50kW)

Application

- Parking garage
- EV Bus station
- EV dealer Workshops
- Commercial fleet operators
- EV infrastructure service providers

Features

- Support multiple standards CCS, CHAdeMo, AC type2
- Simple and easy installation
- Daylight readable touch screen display
- Apply the can communication protocol
- Acquisition of high efficiency (94%) certification
- Simultaneous charging function (100kW)
- RFID authorization
- Customizable
- Easy to use

DC Charger (100kW)

DC Charger (50kW)

Item	100kW DC Charger		
Model	JC-6983-100-8 (AC Type 2, CHAdeMo, Combo)	JC-6952-100-8 (Combo, CHAdeMo)	JC-6931-100-8 (Combo 1ch)
Input	3P4W, 380VAC, 60Hz, 167A, 100kVA		
Output	DC 150~500V, Max 200A (Combo) 1ch or DC 150~500V (@400V, Max 125A) (CHAdeMo) & DC 150~500V(@400V, Max 125A) (Combo) 2ch or AC 380V, 65A, 43kW(AC Type 2) & DC 150~500V (@400V, Max 125A) (Combo, ChadeMo) 2ch	DC 150~500V, Max 200A (Max 100kW) (Combo) 1ch or DC 150~500V(@400V Max 125A) (CHAdeMo) & DC 150~500V(@400V Max 125A) (Combo) 2ch	DC 150~500V, Max 200A (Combo) 1ch
Efficiency	94%(@Full Load)		
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)		
User interface	24" LCD		
User authorization	RF Card, IC Card		
Protection grade	IP54		
Size	602(W) x 1,747(H) x 718(D)mm		
Protective Function	Over Voltage, Over Current, Short-Circuit, Earth Leakage, Contactor Welding, Surge Protection		
Charging Type	SAE Combo Type 1 or CHAdeMo IEC or 62196-2 Type2	CHAdeMo or SAE Combo Type 1	SAE Combo Type 1

Features

- Camera (Option)
  Vehicle number recognition
  Vehicle monitoring
  Security system
- LED indicator
- 24" LCD Touch screen
- RFID/Card reader

Simultaneous DC 100kW Charging

High energy efficiency

Intuitive interface

KO
Designed and made in Korea

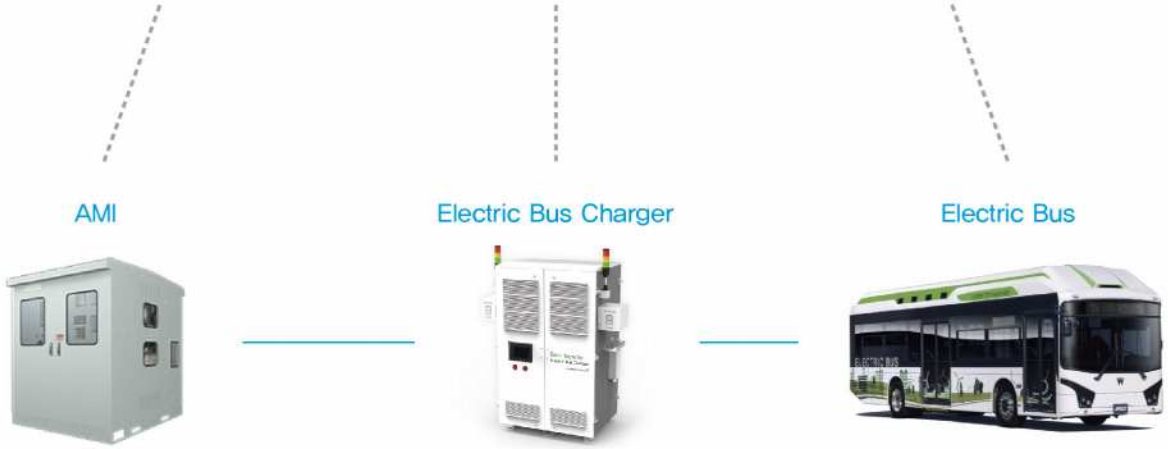
Item	50kW DC Charger		
Model	JC-6933-TM2KD-3 (AC Type 2, CHAdeMo, Combo)	JC-6952-50-3 (Combo, CHAdeMo)	JC-6931-50-3 (Combo 1ch)
Input	3P4W, 380VAC, 60Hz, 84A, 55kVA		
Output	DC 150~500V(@400V, Max 125A) 1ch (Combo or CHAdeMo) or AC 380V, 65A, 43kW (AC Type 2)	DC 150~500V(@400V, Max 125A) 1ch (Combo or CHAdeMo)	DC 150~500V(@400V, Max 125A) 1ch (Combo)
Efficiency	94%(@Full Load)		
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)		
User interface	8 or 12.1" LCD	12.1" LCD	12.1" LCD
User authorization	RF Card, IC Card		
Protection grade	IP54		
Protective Function	Over Voltage, Over Current, Short-Circuit, Earth Leakage, Contactor Welding, Surge Protection		
Size	500(W) x 1,662(H) x 710(D)mm		
Charging Type	SAE Combo Type 1 or CHAdeMo or IEC 62196-2 Type2	CHAdeMO or SAE Combo Type 1	SAE Combo Type 1

Electric Bus DC Charger (300kW)

Easy to Install | Easy to Use | The Safest | Multi Standard | ECO Friendly

Features

- Maximum output range : 200V ~ 1000V
- High efficiency (94%) charging power module fitted
- Monitoring the operation of the charger
- Charge voltage/current/power/SOC/time display function
- Manage the history and charges
- Record the number of charging days, charges, etc. per electric bus
- Supports simultaneous and sequential charging
- Charge scheduling during late night
- Easy hardware configuration for easy maintenance, easy replacement, and easy updates



Item	Electric Bus DC Charger
Model	JC-6832-300
Input	3P 4W, 380VAC, 500A, 50/60Hz, 330kVA
Output	DC 200~1000V(@750V, Max 200A) 2CH
Efficiency	94%(@Full Load)
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)
User interface	8" LCD
User authorization	RF Card
Protection grade	IP54
Protective Function	Over Voltage, Over Current, Short-Circuit, Earth Leakage, Contactor Welding, Surge Protection
Size	1,630(W)×2,120(H)×875(D)mm
Charging Type	SAE Combo Type 2 or GB/T

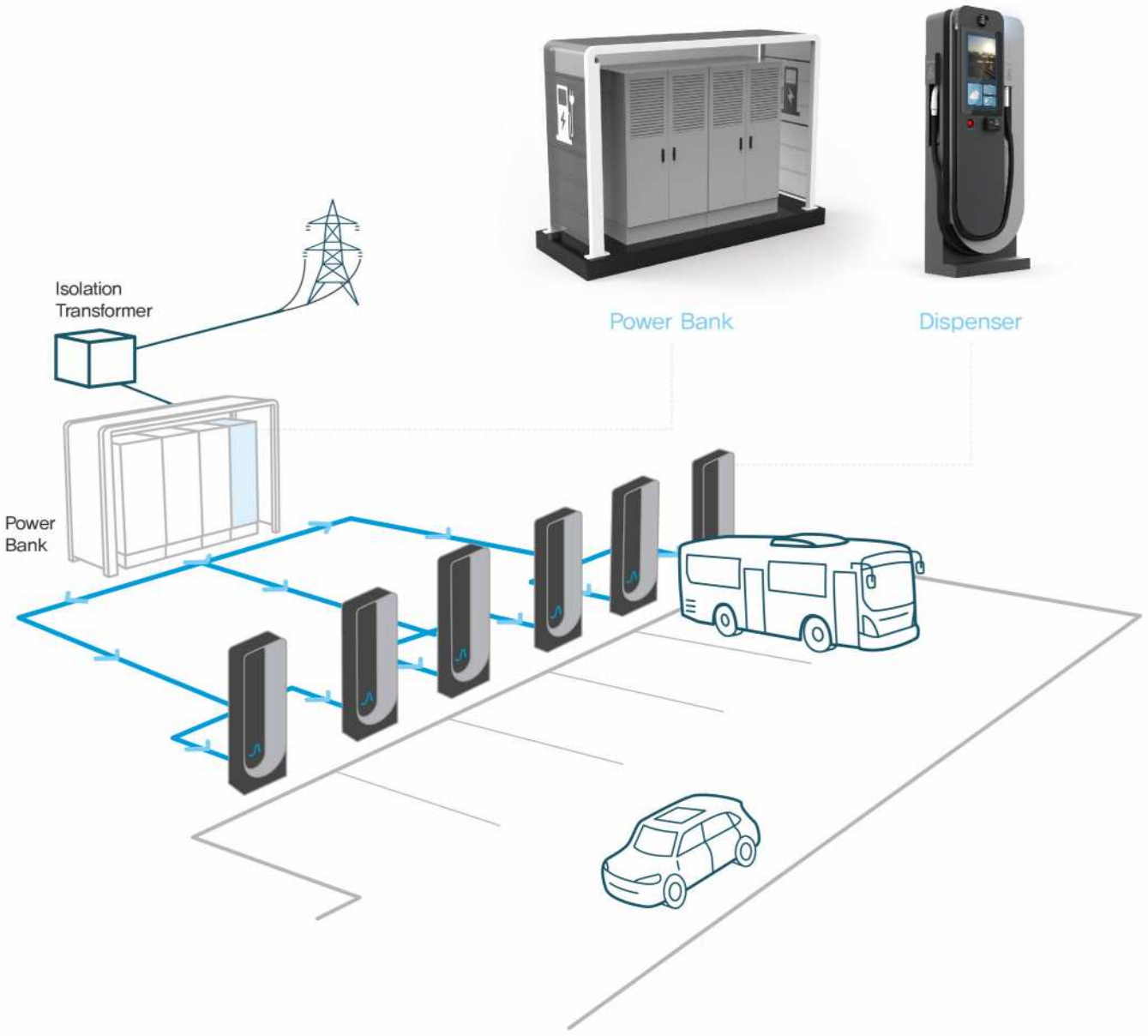
High Power DC Charging System

Application

- Highway service station
- Parking garage
- EV Bus station
- EV dealer workshops
- Commercial fleet operators
- EV infrastructure service providers

Features

- Support multiple standards CCS1, 2, CHAdeMo
- Simple and easy installation
- Daylight readable touch screen display
- Apply the can communication protocol
- Acquisition of high efficiency(94%) certification
- Flexible power distribution function, adjust output power according tothe demand of electric vehicles
- RFID autorization



Distributed power sharing management

Additional power modules within the power bank can be flexibly expanded

SCENARIO – Four EVs are plugged in

- Power Sharing Algorithm : Equal load share

  In this example, if four vehicles capable of receiving a 100kW charge come to the site and plug in at the same time, Each vehicle will receive a full 100kW charge. This represents an equal load sharing scenario

Item	High Power DC Charging System	
Model	JC-6504-100-49 **(Power Bank)**	JC-6651-100-01 **(Dispenser)**
Input	3P 4W, 380VAC, 50/60Hz, 167A, 110kVA	AC : 220VAC, 50/60Hz DC : 150~500V, Max 200A
Output	DC 150~500V, Max 200A	DC 150~500V, Max 200A
Efficiency	94%(@Full Load)	
Environment condition	Temperature : -25°C ~ 50°C, Humidity : 20% ~ 95% (However, there shall not be dewdrop)	
User interface	-	8" LCD
User authorization	-	RF Card, IC Card
Protection grade	IP54	
Protective Function	Over Voltage, Over Current, Short-Circuit, Earth Leakage, Contactor Welding, Surge Protection	Over Voltage, Over Current, Short-Circuit, Earth Leakage
Size	895(W) x 1,762(H) x 450(D)mm	695(W) x 1,830(H) x 340(D)mm
Charging Type	-	CHAdeMO or SAE Combo Type 1

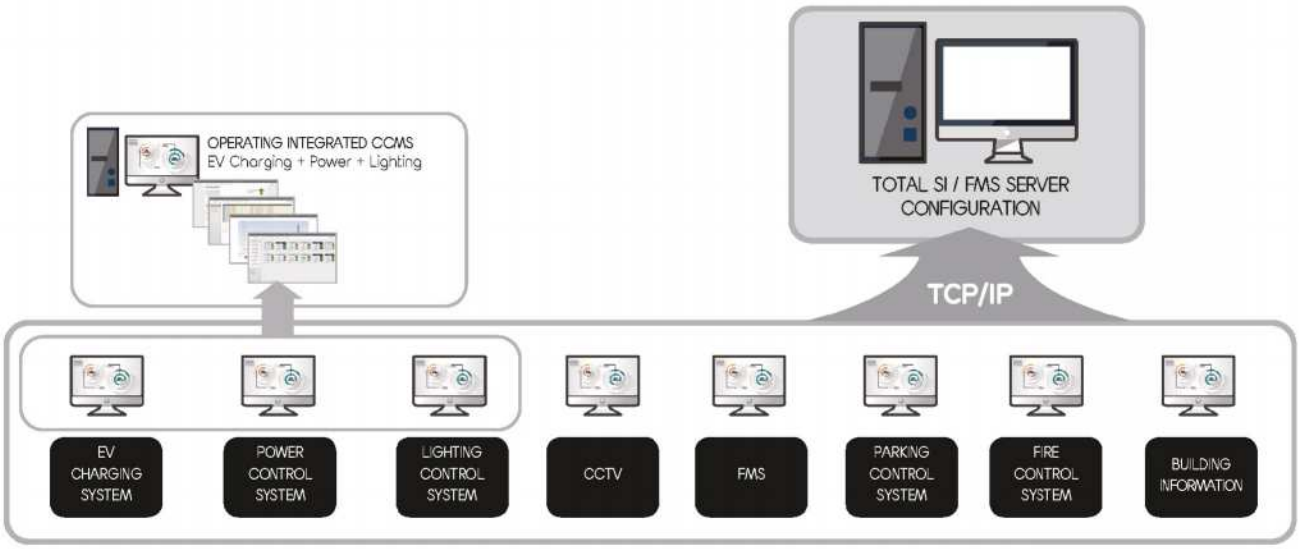
EV Integrated Charging Total Platform

BEMS BUILDING ENERGY MANAGEMENT SYSTEM

ELECTRONIC VEHICLE CHARGING OPERATION PLATFORM FOR SI SYSTEM

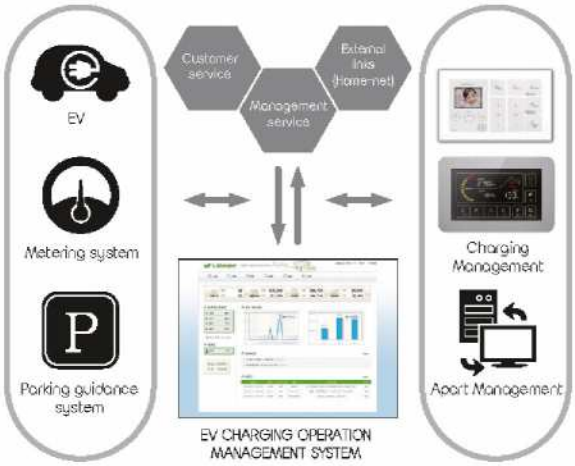
- OPERATE INTEGRATED CCMS (SOFTWARE INTEGRATED)
  : Electricity control + light control + electronic vehicle charging system
- OPERATION AND MANAGEMENT OF EMS (ENERGY MANAGEMENT SYSTEM)
  charging facilities
- CONFIGURE ELECTRICITY CONTROL AND DERIVE TO AVOID ELECTRICITY PEAK
- CONFIGURE THE SYSTEM FOR DERIVING THE CHARGE OF ELECTRONIC VEHICLES FOR PARKING CONTROL
- Maintain the safety for charging facilities of electronic vehicles through configuration of CCTV
- DISCONNECT ELECTRICITY AND ACQUIRE SAFETY IN CASE OF FIRE THROUGH CONNECTION OF FIRE-FIGHTING SYSTEM
- OPTIMIZE THE OPERATION OF FACILITIES FOR AUTOMATIC CONTROL OF BUILDINGS

SYSTEM OF INTEGRATED OPERATION OF CHARGING SYSTEM OF BUILDING ELECTRONIC VEHICLES



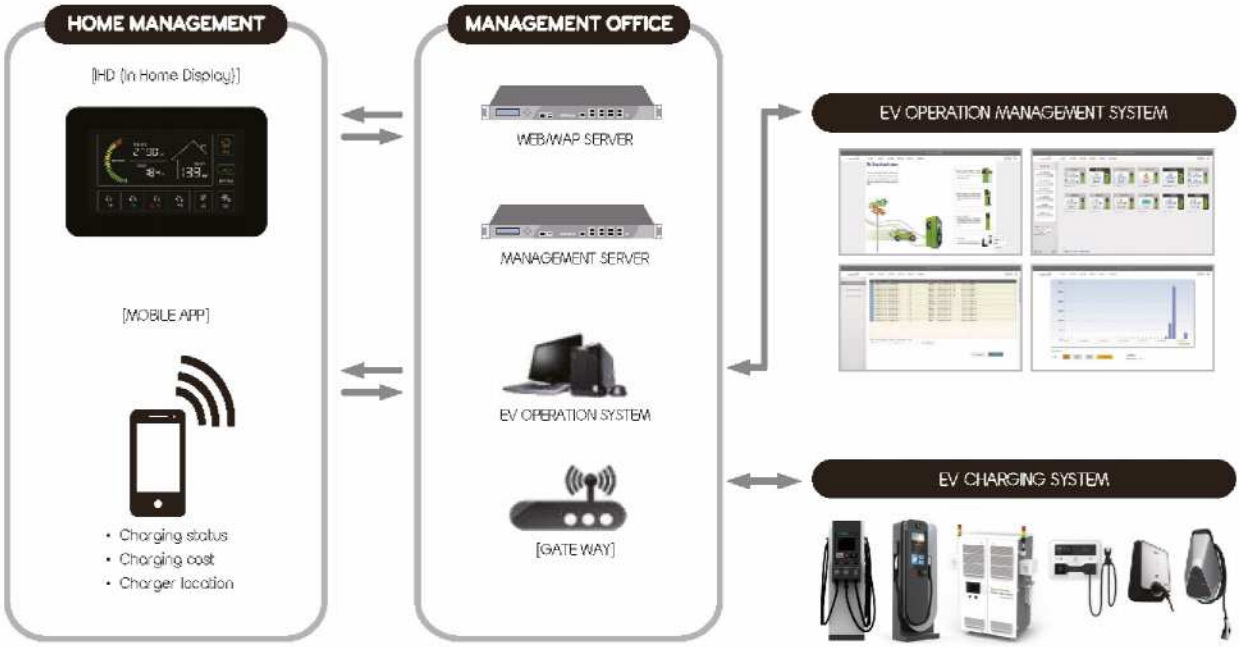
HEMS HOME ENERGY MANAGEMENT SYSTEM

INTEGRATE CHARGING PLATFORM FOR ELECTRONIC VEHICLES CONNECTED WITH BEMS FOR JOINT HOUSES



- CONNECT WITH SYSTEM OF APARTMENT HOME NETWORK
- CHARGE THE ELECTRICITY FEES ON TOP OF THE MAINTENANCE ON RELEVANT HOUSEHOLDS
- CONNECT WITH WALL-PAD OR MOBILE APP
- ESTABLISH THE INTEGRATED CHARGING INFRASTRUCTURE WITH INTELLIGENT HEMS : Control electricity, review in remote control, home-net, maintenance server (web-server) electronic peak, demand management, and EMS connection
- MANAGEMENT SYSTEM FOR ELECTRONIC VEHICLES CONNECTED WITH HOME-NET : Provide charging state and information of IHD (in-home display)
- ESTABLISH THE SYSTEM OF EV CHARGING FEES (INTEGRATED FEES)
: Impose the electronic vehicle amount and maintenance for inspection system in remote area

OPERATING SYSTEM DIAGRAM FOR ELECTRIC VEHICLES IN APARTMENT



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