HEPEG ENGINEERING CONSULTING SERVICES

Highly Efficient Power Electronics Generation

22 KW Onboard Charger (OBC)

Custom Designed Automotive Onboard Charger With Bidirectional Charging Mode And Universal Grid Compatibility

State-of-the-Art Design for the EV Market

Designed in California, USA

Rev. 2

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Highlights

HEPEG offers vertical integration for custom-made All-in-One Solution that seamlessly integrates with global charging standards solution for Bi-directional 22kW Onboard Charger (OBC) to charge any type of electric vehicle high-voltage battery system.

*All information in this brochure preliminary and subject to change without notice.

Why HEPEG?

Using solution by HEPEG will help to cut down building costs and avoid dependency from other suppliers.

- **EXPERIENCE**
  HEPEG has successfully delivered OBC for production
- **BENEFITS**
  HEPEG can provide all design manufacturing files to EV OEM
- **FAMILIARITY**
  HEPEG knows EV US/EU charging standards, systems and equipment
- **HISTORY**
  HEPEG has collaborated successfully with EV OEMs in the past
- **RESPONSIVENESS**
  HEPEG can adapt quickly and respond to EV costumers needs

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OBC Key Features

V2X CHARGING ENABLES BIDIRECTIONAL ENERGY FLOW BETWEEN ELECTRIC VEHICLES (EVS) AND THE FOLLOWING EXTERNAL SOURCES

- V2L vehicle supplies external or internal AC Loads
- V2B/V2H Vehicle supplies AC to building or home
- V2G Vehicle supplies AC directly into the public grid
- V2V vehicle supplies AC into another vehicle/trailer or vice versa

ALLROUNDER FOR GLOBAL APPLICATION

Charging standards:

Type2, Type1, CCS 1/2, optional: CHAdeMO, GB/T, NACS

AC Direct Mode Universal Grid-topologies:

Standard three phase TT/TN/IT w/ or w/o neutral

Single phase (EU:L1-N) / Split phase (USA: L1-L2/N)

Generator and range extender operation

DURABILITY AND SAFETY

- High IP protection level IP6K9K/IP67
- Functional Safety ISO 26262 ASIL B for on road vehicle application
- ECE R10/IEC 61581 compliant
- ISO 16740-4 (Environmental Durability) compliant Cyber Security
- ISO 21434

COMMUNICATION AND DIAGNOSTICS

CAN 1

- SAE J1939 vehicle CAN interface
- UDS Diagnostic Services – ISO 14229

CAN 2 Internal

- Enhanced diagnostics
- Inter cluster communication in Master-/Slave- Mode

OUTSTANDING PERFORMANCE AND EFFICIENCY

- Outstanding efficiency using high frequency Silicon Carbide (SiC) technology
- Extremely compact and lightweight design
- Shortest charging time due to continuous full load performance
- Fully EMI/EMC compliant according to ECE R10

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OBC Technical Data

Input/output AC voltage 3-ph.	360V to 525V (400V/480V) x 3
Input/output AC current 3-ph.	<32A x 3 (G2V-FCM Mode)
Input/output AC voltage 1-ph.	85V to 305V (120V/240V)
Input/output AC current 1-ph.	<80A (Type 1 Split Ph.)
Battery Voltage Range	200V to 920V (Optional Range)
Battery Current	-70A to +70A (Optional Range)
Voltage total harmonic distortion	<5.5%
AC Power	22KVA
Power factor	0.98
Starting inrush current	14.7A
Input frequency	45Hz to 65Hz
Insulation resistance	5.5Meg
Leakage current	3.5mA
Efficiency	<97%
Output/Input capacitor(Without Battery)	100uF
Output/Input current ripple (3 Ph.)	3%
Output/Input voltage tolerance (3 Ph.)	5%
Operating temperature (8.2 ltr/min)	-30°C to +60°C
Storage temperature	-40°C to +85°C
Max. liquid temperature	+70°C
Liquid temperature range	-30°C to +65°C
Humidity	95%
Altitude	-2500m to +2500m
Weight	19.7kG
Housing	Aluminum Die-Casting or CNC
Outline dimensions	590 x 385 x 99mm
IP Protection	IP6K9K/ IP67
Functional safety	ASIL B
Isolation input/output	DIN EN 61851-1 2012-01
AC overvoltage protection	Yes
AC undervoltage protection	Yes
Short circuit/ overcurrent protection	Yes
Over temperature protection	Yes
Insulation resistance	Yes
+24V/12V reverse polarity protection	Yes
Communication failure protection	Yes
Passive Discharge	Yes

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Let's Do Something Unique and Valuable

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Thank You !