



eInfochips DC Fast Charger Design

Intelligent, Connected and Future-Ready DC Charger

DC Fast Charging – Market Scenario

USA	<i>By 2034, DC fast chargers will grow to take 33% of the public charger market share*. \$5 billion funding program for 5-year National Electric Vehicle Infrastructure (NEVI) under Bipartisan Infrastructure Law.</i>
EMEA	<i>Target of 3.5 million charge points by 2030. €1.5 billion investment approved for alternative fuels infrastructure including electric fast-charging across Trans-European Networks.</i>
APAC	<i>ASEAN markets will require est 95,000 public AC and 40,000 DC charging points by 2030 – 30 X greater than today's numbers as per McKinsey. China accounts for more than 90% market share.</i>

DC Charging Scenario

Range (Typical)
50kW – 350kW

of DC Chargers (2023)
868,000 Units Worldwide

Growth in Numbers (2022)
330,000 Units (>60%) ↑

2030 Roadmap
500,000 Fast Chargers by 2030 (US)
3.5 M Charge Points by 2030 (EU)

DC Charger Reference Design – Key Features



* Representative image

DC Charger Photos



Front View

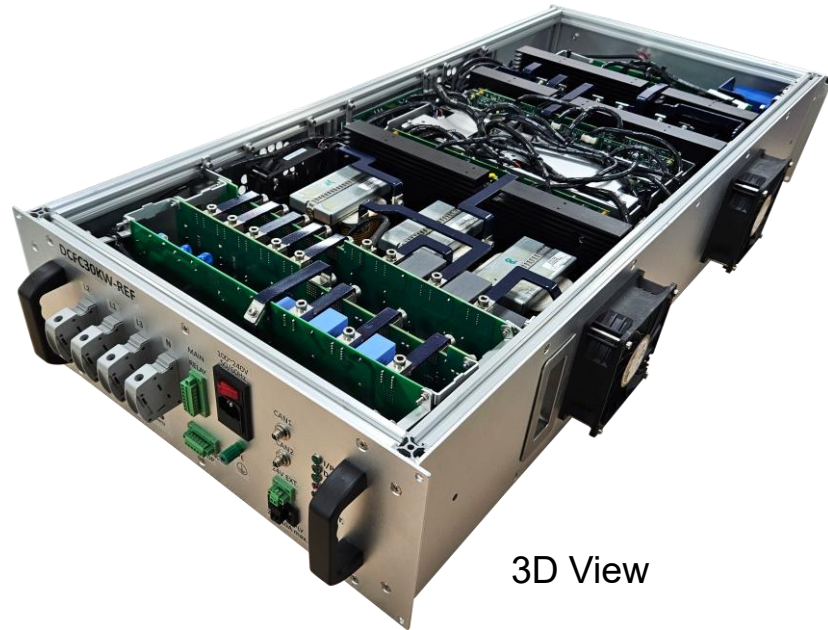


Rear View



3D View

Building Blocks – Power Module



3D View



Top View



Input Fuse, EMI Filter Board

Metering and Pre-Charge Board

3 x Inductors

Power and Gate Driver Boards

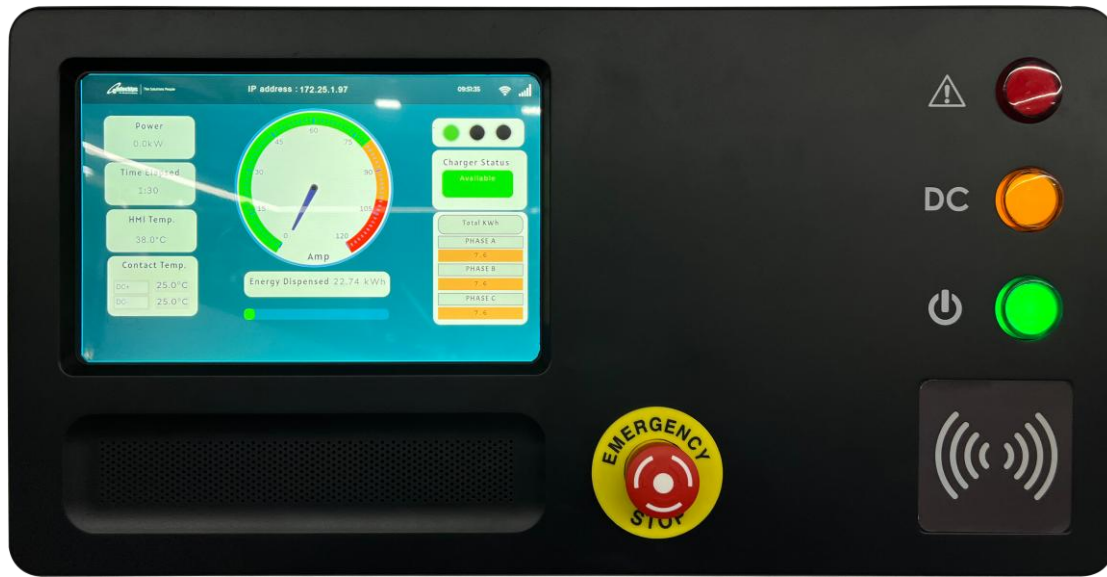
Power Supply

Main Controller Board

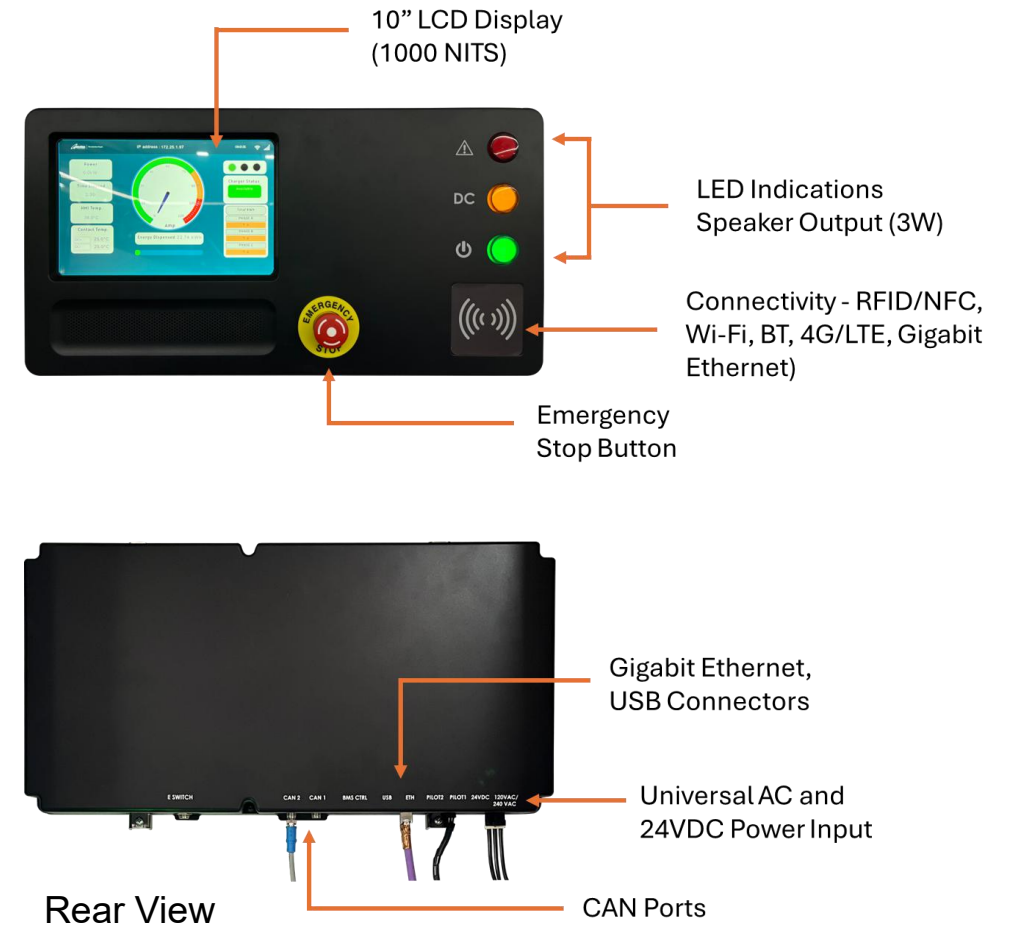
HF Transformer

Output DC Sensing and Isolation Monitoring Board

Building Blocks – SECC Unit



Front View



Rear View

DC Charger - Technical Specifications

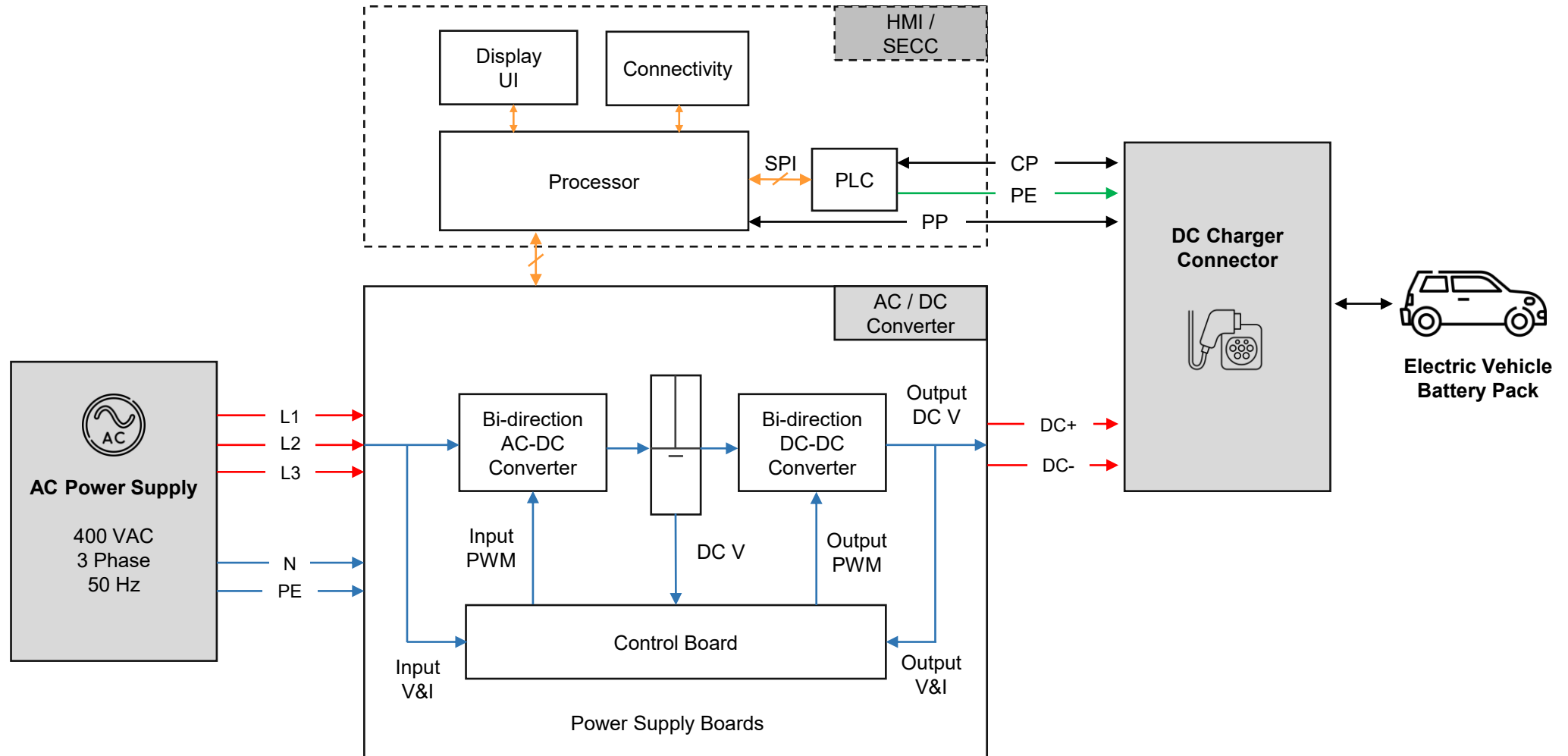
Parameters	Min.	Typical	Max.	Unit
AC Side (3 Phase)				
Line Frequency	45	50/60	65	Hz
Line Voltage	340	400	460	V _{L_RMS}
Power Factor (Full load)	-	≥0.95	-	-
I_thd	-	5	-	%
Wires	3 - Phase, 5 - Wire AC (L1, L2, L3, N and PE)			
DC Side				
Power	-	30	-	KW
Output voltage range	350	500	750	V
Voltage ripple	-	10	-	Vpk_pk
Current	-	60	TBD	A
Efficiency (Full load)	-	>98	-	%
Number of Guns	1			
Environmental				
Operating Temperature	-30	-	60	°C
Storage Temperature	-40	-	70	°C
Humidity non-condensing	5	-	95	%Rh
Altitude	-	2000	-	m
Cooling	Forced Air Cooling			

Input Protections	Input Over/Under Voltage, Over temperature, Over current, Ground Fault, RCD/CCID Device, Short circuit, Surge, Emergency shutdown
Output Protections	Over temperature, Over current, DC High Voltage (Input/Output), Galvanic Isolation, Electric shock (DC Isolation monitor)

Network Interface	Gigabit Ethernet, Wi-Fi
Network Communication	OCPP 1.6J
Vehicle Communication	ISO15118, IEC 61851-23, -24
Charging Interface	CCS1 / CCS2
Other Features	Energy Metering

Certifications (Targeted)	     
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DC Charger – Architecture Diagram



One Stop EV Charging Solution

Testing & Certification

- Pre-compliance & certification testing (CE, FCC, UL, RoHS, REACH etc.)
- Functional, EDVT, Thermal testing
- Mechanical (IP67, Shock, Pressure Washing & UV Radiation)
- QA and test automation

Firmware Development

- BSP development/customization/testing
- OS experience (Linux, RTOS, Android etc.)
- Firmware application, OTA, cybersecurity
- Device Drivers, HAL, Middleware, Libraries

Hardware Design

- OCPP compliant EV charger design
- Embedded, Industrial, Mechanical design
- Components/BoM, Architecture
- PCB schematic, layout, signal integrity
- Board bring-up, prototyping, DFA/DFM

Software/Digital Platform Development

- Cloud-agnostic approach (Azure, AWS, GCP)
- Advanced charging features implementation
- Notifications, push alerts, reports & dashboard
- Data aggregation and analytics

Mobile/WebApp Development

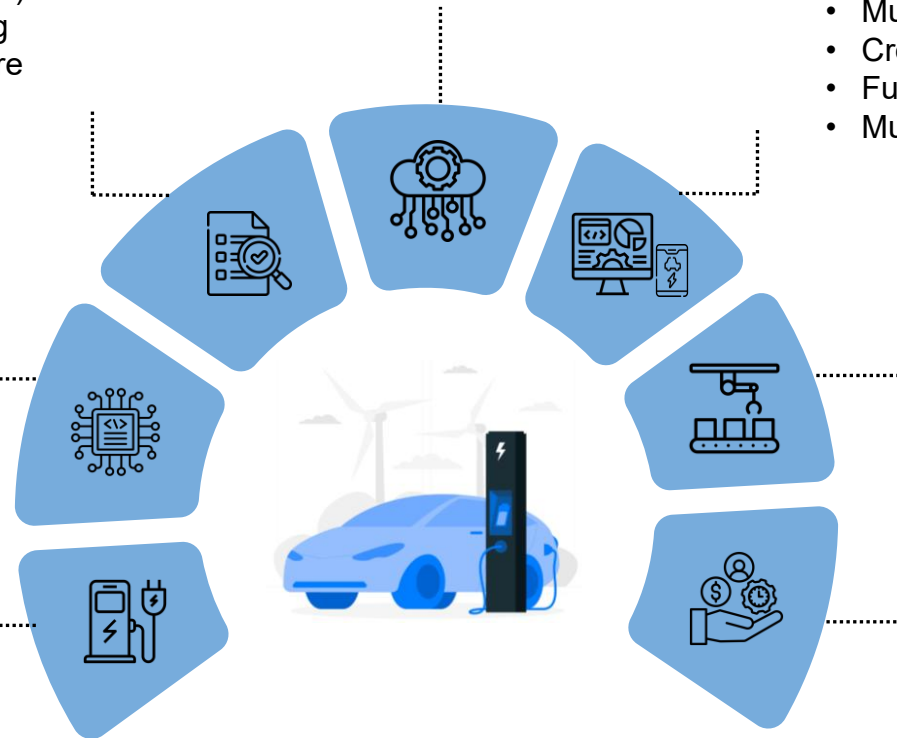
- Multi-tenant web-based platform
- Cross-platform Android/iOS mobile app
- Full-stack design, UI/UX, App Analytics
- Multi-language support

Manufacturing-as-a-Service

- One Stop Solution – design-to-manufacturing
- Design for manufacturing/assembly
- Components/Supply chain navigation
- 15+ contract manufacturers

Managed Services

- Product life cycle management
- Legacy modernization
- L1/L2/L3 Support
- 24x7 NOC, SLA management
- DevOps/CloudOps



Engagement Model/Commercials

Engagement Options	Custom DC Charger HW/SW Design	DCFC Design Licensing Model	Complete Solution (Design + Manufacturing)
How it works?	Bespoke product design based on the client's use case and technical requirements	Client gets the right to use, modify and localize the design as per the customer/market requirements.	Turnkey solution from eInfochips involving design, development and manufacturing of EV chargers as per the required quantities.
Time to Deploy	12 to 16months	6 to 8 months	3months + manufacturing
Commercials	Fixed Price (CapEx)	Fixed Price: One Time Fee + Licensing of IP (CapEx+OpEx)	Fixed Price (CapEx) + Manufacturing cost
Cost Savings	X (Not applicable)	~ 30% Saving on Custom Development	70 to 80% in design cost & additional savings based on manufacturing volume
Postproduction Support Offered	-	Design customization (on need basis)	Sustenance + Product Lifecycle Management

Thank You

