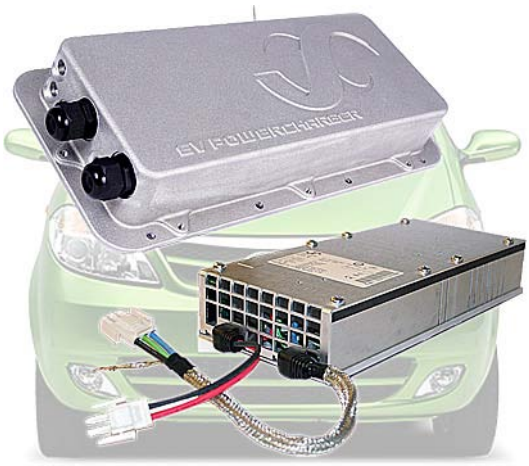

EV Power Charger

3 kW Traction Battery Charger Module

Compact and high efficiency charger for electrical vehicles

The new charger design from *Eltek Valere* has an industry leading efficiency up to 96% and it is extremely compact. Design can be adapted to different battery technologies and ensures fast charging while still maintaining optimal battery life. Its compact design will fit in to any free space in an electrical or plug-in hybrid vehicle.

Applications

For Pure Electrical or Plug-in Hybrid Vehicles

The charger is designed for maximal utilization of a 16A wall socket. It provides an output power in excess of 3 kW with a very high efficiency up to 96%.

Product Features and Advantages

Flexibility

Through the built-in CAN bus connection the unit can be fully controlled from a master unit, and all major values can be read back.
To match optimal charging for various batteries types and technologies, different charging modes can be used:

- Constant voltage
- Constant current
- Constant power
- Max available power (AC)

In order to meet other special requirements on functions or form factors, *Eltek Valere* is open for discussions. Please, contact your local *Eltek Valere* sales office.

Mechanical Design

The charger is designed in a very compact box, measuring only 50x280x120mm (IP20 version) with an output of 3 kW; this represents 30W pr Inch3 or 1800W per liter. In addition, the high efficiency gives little excess heat which again reduces cooling requirements.
The mechanical design ensures good thermal coupling of all major heat generating components against a solid aluminum outer wall (base plate). The charger is intended to be mounted against a cold-plate, water or air cooled, with a sufficient heat transfer capacity for the environmental specification applicable.

Cost Effectiveness

Rectifiers and power modules in the range from 1 to 10 kW are the core of *Eltek Valere* business. Effective design combined with component market knowledge, buying power and efficient manufacturing enables us to offer very cost effective products.

Basic Specification

- Input voltage: ..... 85-275 VAC
- Input current: ..... Max 14A (electronically limited)
- Output voltage: ... See product matrix
- Output Power: ..... Max 3000W
- Efficiency: ..... 96% at 50% load, 95% at 100% load
- Power density: ..... >30W inch^3
- Ambient temp[1]: ... -40 to 60 °C
- Control: ..... CAN bus

[1] On cooling plate

Data subject to change without notice

Designed according to all norms and standards required for installation in vehicles carrying CE and UL marks.

For additional information, please contact us on:
automotive@eltekvalere.com

See reverse side for specifications

EV Power Charger

Additional Technical Specifications

AC Input

Voltage	85-275 VAC (Nominal 230VAC)
Frequency	45-65 Hz
Current	14 A_{rms} maximum
Power Factor	>0,99 at 50% load or more
Input Protection	o Varistors for transient protection o Mains fuse in both lines

DC Output

Voltage	See table below for adjustable voltage range **
Current	See table below
Charge control:	Controlled over CAN bus o Enable/Disable (On/Off) o Constant voltage o Current limit o Power limit o Available power (mains dependent)
Dynamic voltage regulation	±5% for 10-90% or 90-10% load variation, regulation time < 100ms
Ripple and Noise	< 250 mVrms
Output Protection	o Output fuse o Overvoltage shutdown o Short circuit proof o High temperature protection o Under-voltage shutdown: 50V for *.010 & *.110 chargers, 110VDC 100V for *.020 & *.120 chargers, 220VDC 170V for *.030 & *.130 chargers, 360VDC

Applicable Standards

Electrical safety	IEC 61851-1 UL 2202 Compliant to IEC/UL 60950
EMC	EN 61000-6-1 (immunity, light industry) EN 61000-6-2 (immunity, industry) EN 61000-6-3 (emission, light industry) EN 61000-6-4 (emission, industry)
Mains Harmonics	EN 61000-3-2
Environment	WDS 00.00EA-D11

Other Specifications

Efficiency	96% at 50% load, 95% at 100% load
Isolation	o 1.5 KVAC – input to earth o 1.5 KVAC – input to output o 3.0 KVAC – output to earth
Alarms/error messages:	o Internal communication failure o Control system communication timeout o High mains shutdown o Low mains shutdown o High temperature shutdown o Low temperature shutdown o Charger failure o DC voltage high (overvoltage shutdown) o DC voltage low
Warnings:	o Rectifier in power derate mode
Measurements:	Available on CAN bus: o AC voltage, current and frequency o DC voltage and current o Rectifier temperature (two measurements)
Operating temp	-40 to 60°C
Storage temp	-40 to +85°C (-40 to +185°F)
Cooling	External liquid cooled cold plate or convection cooled heat sink. Worst case heat dissipation approximately 200W
Reliability	o MTBF > 162 000 hours, with 60°C cold plate temperature
Humidity	o Operating: 5% to 95% RH non-condensing o Storage: 0% to 99% RH non-condensing
Dimensions	o 49x280x120mm (IP20) o 60x355x167mm (IP67)
Weight	o 2.8 kg (IP20) o 4.3 kg (IP67)

Specifications are subject to change without notice 241121.nnn.DS3 – v3(c)

Ordering Information

Part no.	Description Chargers	Output Power	Output Voltage Range	Output Current
241121.010	EV Power Charger 110/3000 HE IP20 G2	3000W	70 – 122Vdc	25A
241121.110	EV Power Charger 110/3000 HE IP67 G2	3000W	70 – 122Vdc	25A
241121.020	EV Power Charger 220/3000 HE IP20 G2	3000W	150 – 250Vdc	16A
241121.120	EV Power Charger 220/3000 HE IP67 G2	3000W	150 – 250Vdc	16A
241121.030	EV Power Charger 360/3000 HE IP20 G2	3000W	250 – 420Vdc	10A
241121.130	EV Power Charger 360/3000 HE IP67 G2	3000W	250 – 420Vdc	10A

Part no.	Description Accessories
276995	Cold Plate for Liquid Cooling IP20
278796	Cold Plate for Liquid Cooling IP67
275943	Thermal interface sheet IP20
275942	Thermal interface sheet IP67
281880	Connector kit IP20 chargers (for AC, DC & CAN cables)
279665	EV Charger Development kit (including CAN/USB converter)

** Please, refer to technical specifications for further details

www.eltekvalere.com
Headquarters:
Eltek Valere
Gråterudv. 8, PB 2340 Strømsø, 3003 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10

ELTEK VALERE always on