OAKSUM

Modules and Components
for Charging Systems

AC-DC Power Converters
AC-AC Chargers for EV

Product Range

www.oaksum.com

contact: sales@oaksum.com

OAKSUM

Modules and Components
for Charging Systems

The OAKSUM range of products are a market leading brand, providing AC/DC and AC/AC power conversion for the power electronics market, in particularly the EV and battery charging sector.

Innovative design and a deep history of quality and reliable product manufacture ensures high technical performance at very competitive costs.

The OASKUM range includes AC/DC converters up to 30KW, suitable for multiple connection to total powers in excess of 400KW, Bidirectional power converters (suitable for V2G) and a complete range of smart and affordable AC EV Charging modules..

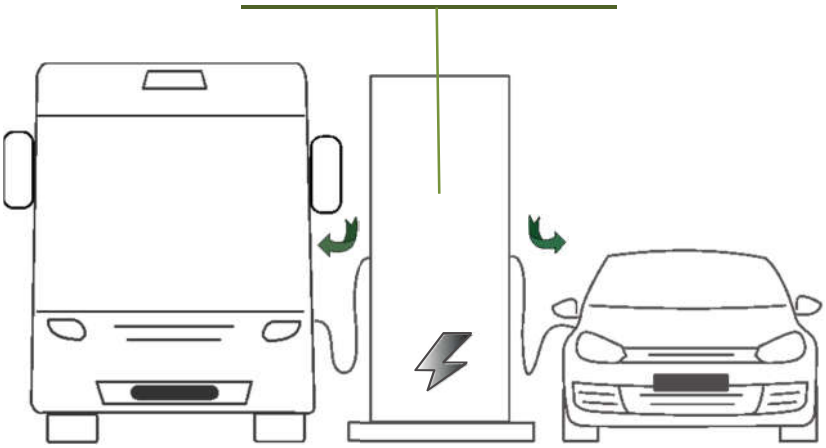
With a global engineering team, the OAKSUM products are fully supported to ensure our customers projects are developed to provide the correct technical solution within a fast development cycle time to market.

In addition to the comprehensive range of standard power conversion portfolio, customized design options, including customers own branding and specific colour schemes, are also a well recognized part of the OAKSUM service.

OAKSUM is the brand name of the high power electronics division of the MYRRA company.

As part of the £400M DiscoverIE group, listed on the Main Market of the London Stock Exchange, the OAKSUM brand benefits from the group's global reach and high investment in future design and manufacturing technologies.

AC-DC Power Converters



The OAKSUM range of state-of-the art AC/DC Power Converters suitable for fast DC charging.

The high efficiency, high power density converters are specifically designed for fast charging applications including :

E-Bus & Service vehicle operators, EV manufacturing lines, EV workshops, EV Fleet Operators.

- Wide Output Voltage Ranges
- Power Converters can be connected in parallel to create high total power systems
- High efficiency >= 95%
- Compact design
- High power density
- Power factor >= 0.99
- Input/output Low & Over Voltage Protection, Short Circuit Protection, Over Temperature Protection
- Supports CAN and RS-485 bus communication
- Rack-mountable

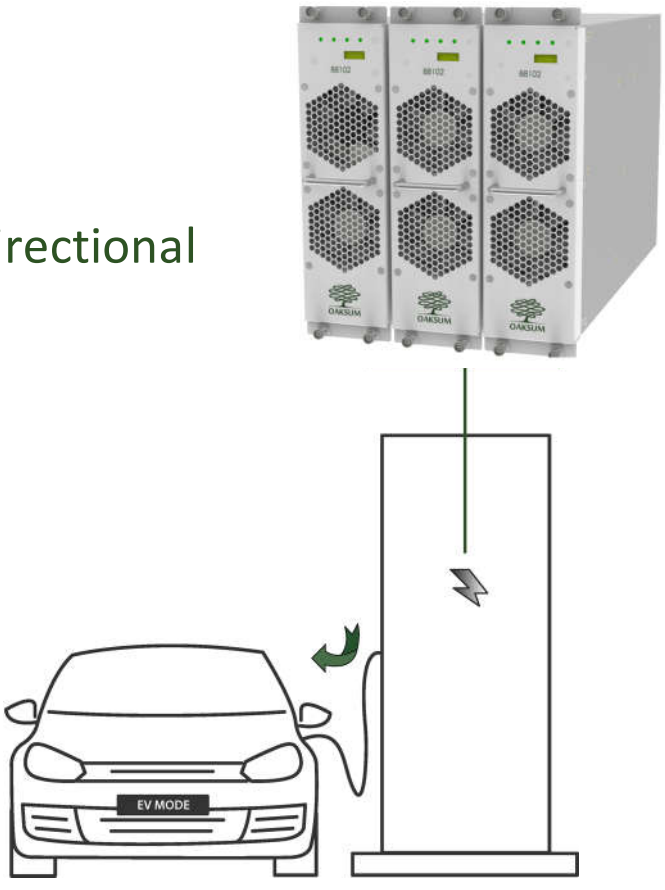
10kW Mono Directional AC/DC Converter

A family of 10kW AC/DC Converters specifically designed for EV DC charging

AC 3 phase input module with a wide range DC output

- Very High Efficiency
- High Power factor
- Compact size
- Ultra-High Power Density
- Wide Output voltage Range with small level output ripple voltage
- Low Standby Power Consumption
- Total Protection with alarm functions: input over/under voltage, output over voltage, over current, over temperature protection, output under voltage alarm, output short circuit protection.
- LED Display
- Supports CAN bus communication, power modules can be grouped together by controller
- Hot swap

10kW Mono-Directional



10kW Mono-Directional

OAKSUM

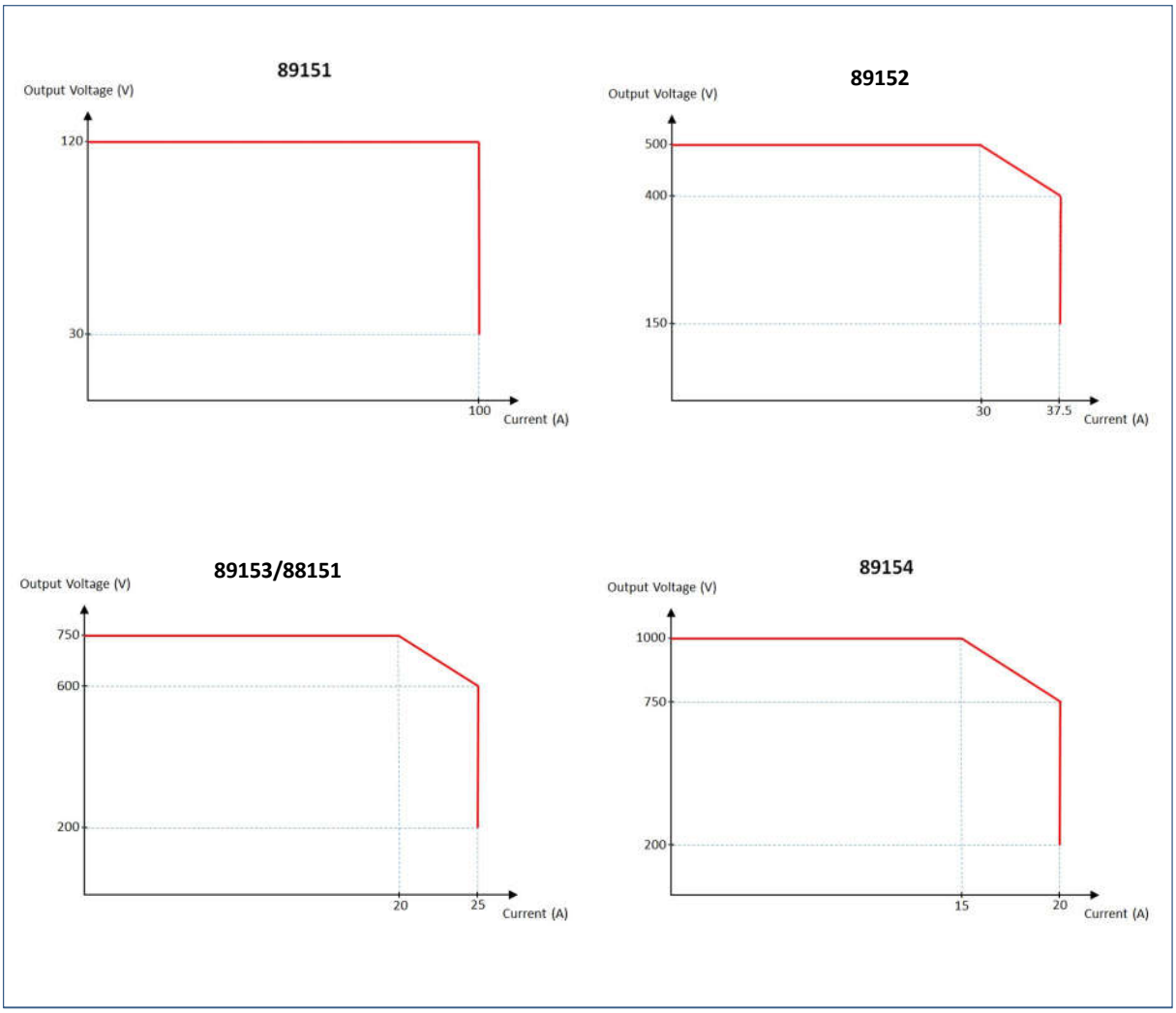
	Part Number	88102
AC Input	Input Voltage	323VAC ~ 437VAC 3 Phase without neutral
	Rated Input Voltage	380V AC
	Input Frequency	45Hz ~ 65Hz
	Max. Input Current	< 20A
	Power Factor	≥0.99 @ rated input and DC output with rated load
	Input Current Harmonic	5%@ rated input and DC output with rated load
	Input Under Voltage Protection	293~313Vac (Can auto recover, test with 5A load)
	Input Overvoltage Protection	447~467Vac(Can auto recover, test with 5A load)
	Input Power Derating	Linear power derating from 50'C to 60'C operation
DC Output	Rated Output Voltage	650V DC @ rated AC input
	Constant Power Range	Constant Power Output above 500VDC
	Output Voltage Range	200 ~ 800V DC
	Output Current Range	0 ~ 20A
	Output Overvoltage Protection	820V
	Output Under Voltage Alarm	
	Short Circuit Protection	Yes
	Voltage Stabilised Accuracy	≤±1.0%
	Current sharing	≤±5%@ at the range of 50～100％ load
	Start Up Time	normally 3s≤t≥8s
	Efficiency	≥95% @ Rated input, half load output
Communication & Alarm	Communication	CAN
	Alarm & Status	Display on LED panel
Operating Environment	Operating Temperature	-40°C ~ +60°C @+50~ +60 derating 20% in linearity ℃
	Overtemperature Protection	＞60 (Auto-recoverable when temperature is less than 60)
	Storage Temperature	-40°C~ +70°C
	Storage Humidity	95%@40 ±2
	Altitude	≤4000m
Mechanical	Acoustic Noise	≤55dB @A-weighted，test distance is 1 meter
	Cooling	Fan cooling
	Dimensions	306mm (H) x 84mm (W) x 449.7mm (L) +/-0.5mm
	Weight	Approx. 11Kg
	MTBF	≥250Khour ; test condition: 25℃ , rated input, full load output.

15kW Mono Directional AC/DC Converter

A family of 15KW AC/DC Converters specifically designed for EV DC charging

AC 3 phase input with a wide range of output voltages (30V to 1000VDC)

- Very High Efficiency
- Compact size
- Ultra-High Power Density
- Wide Output Voltage Range Small Output Ripple voltage ≤2V p-p
- Low Standby Power Consumption ≤10W
- Total Protection with alarm functions: input over/under voltage, output over voltage, over current, over temperature protection, output under voltage alarm, output short circuit protection
- LED Display
- Supports CAN, 485 bus communication, power modules can be grouped together by controller
- Battery current reverse protection
- Hot swap
- Discharge circuit inside



15kW Mono Directional

OAKSUM

	Part Number	89151	89152	89153/88151	89154
AC Input	Input Voltage	260VAC ~ 485VAC 3 Phase without neutral			
	Input Frequency	45Hz ~ 65Hz	45Hz ~ 65Hz	45Hz ~ 65Hz	45Hz ~ 65Hz
	Max. Input Current	< 31A	< 31A	< 31A	< 31A
	Power Factor	Rated output load ≥ 0.99			
	THD	≤ 5%	≤ 5%	≤ 5%	≤ 5%
	Input Under Voltage Protection	255V ±5V	255V ±5V	255V ±5V	255V ±5V
	Input Overvoltage Protection	490V ±5V	490V ±5V	490V ±5V	490V ±5V
	Input Power Derating	260V ±5V < Vin <304V ±5V			
		Linear power derating from 100% to 50%			
DC Output	Rated Output	120V/100A	500V/30A	750V/20A	1000V/15A
	Constant Power Range	120V	400 ~ 500V	600 ~ 750V	750 ~ 1000V
	Output Voltage Range	30 ~ 120V	150 ~500V	200 ~ 750V	200 ~ 1000V
	Output Current Range	0 ~ 100A	0 ~ 37.5A	0 ~ 25A	0 ~20A
	Output Overvoltage Protection	130V ±5V	510V±5V	760V ±5V	1010V ±5V
	Output Under Voltage Alarm	25V ±2V	140V±2V	190V ±2V	190V ±2V
	Short Circuit Protection	Output current decreases when short circuit occurs			
	Voltage Stabilised Accuracy	≤±0.5%	≤±0.5%	≤±0.5%	≤±0.5%
	Load sharing	≤±3%	≤±3%	≤±3%	≤±3%
	Max Startup Overshoot	≤± 1%	≤± 1%	≤± 1%	≤± 1%
	Current Stabilised Accuracy	≤± 1%	≤± 1%	≤± 1%	≤± 1%
	Start Up Time	normally 3s≤ t ≥8s			
	Efficiency	Highest efficiency >96%, Rated efficiency >95%			
Communication & Alarm	Communication	CAN & 485	CAN & 485	CAN & 485	CAN & 485
	Max number of parallel converters	60 converters	60 converters	60 converters	60 converters
	Alarm & Status	Report to monitor via CAN bus or 485 bus, Display on LED panel			
Operating Environment	Operating Temperature	-30°C ~ 70°C derating from 55°C			
	Overtemperature Protection	At temperature > 70°C ±4°C or < -40°C ±4°C power converter will shut down automatically			
	Storage Temperature	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
	Humidity	≤ 95% RH without condensation			
	Altitude	79kPa ~ 106kPa/2000m			
Mechanical Characteristics	Acoustic Noise	< 55dB	< 55dB	< 55dB	< 55dB
	Cooling	Fan cooling	Fan cooling	Fan cooling	Fan cooling
	Dimensions	219.5mm (H) x 84mm (W) x 395mm (L)			
	Weight	< 10Kg	< 10Kg	< 10Kg	<10Kg
	MTBF	> 500,000 hours (40°C)			

15kW Bi-Directional AC/DC Converter

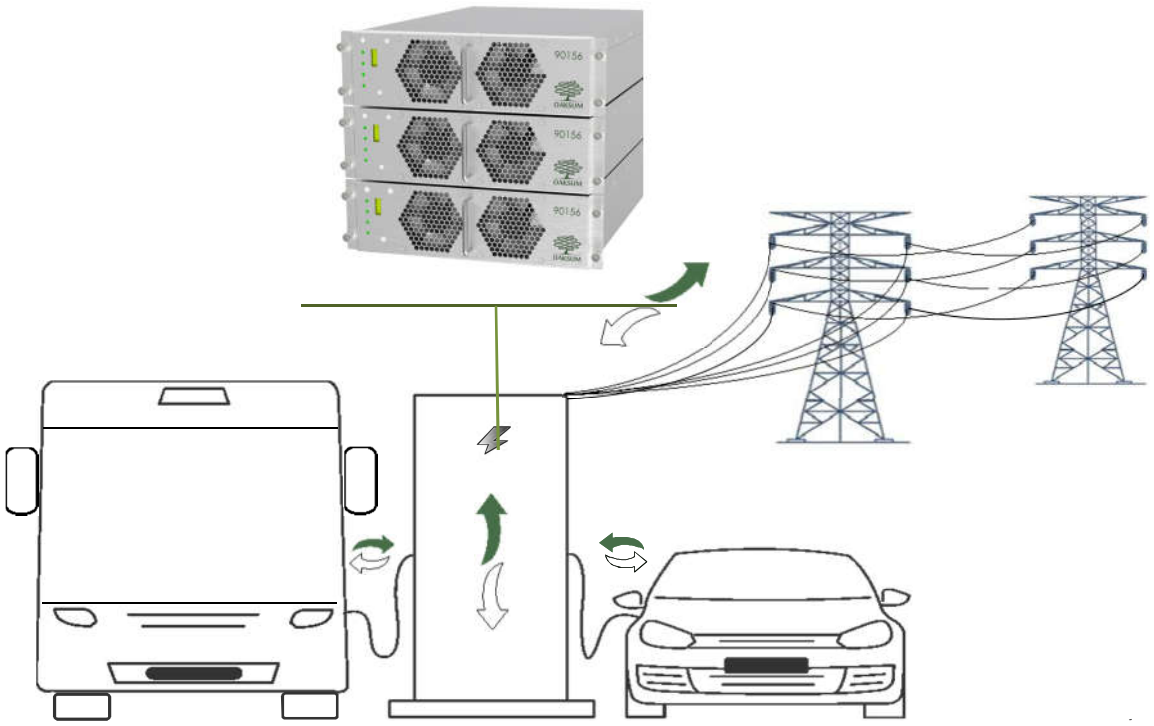
An isolated 15KW Bi-Directional AC/DC Converter

AC 3 Phase input with a wide DC output to supply battery power or DC load

Reverse operation for discharge mode for converting and supplying the voltage of the battery pack or DC source back to the grid (V2G)

- Very High Efficiency
- Compact size
- Ultra-High Power Density
- Wide Output Voltage Range
- Islanding Protection
- High power factor
- Total Protection with alarm functions: input over/under voltage, output over voltage, over current, over temperature protection, output under voltage alarm, output short circuit protection
- LED Display
- Supports CAN bus communication, power modules can be grouped together by controller

Bi-Directional AC/DC Converter



15kW Bi-Directional AC/DC Converter

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	Part Number	90156
AC Input	Input Voltage	304VAC ~ 456VAC 3 Phase without neutral
	Input Frequency	45Hz ~ 65Hz
	Max. Input Current	< 30A
	Power Factor	Rated output load ≥ 0.99
	Input Under Voltage Protection	294Vac ~ 304Vac @ Auto recovering, tested with 5A load
	Input Overvoltage Protection	456Vac ~ 466Vac@ Auto recovering, tested with 5A load
DC Input	Rated DC Input Voltage	750V DC
	DC Input Voltage Range	200~750Vdc
	Max Input Current	20A @200-500Vdc max 20A input; 500-750Vdc constant 10KW input
	Max Input Power	15KW
DC Output	Maximum Output Power	15KW
	Output Voltage Range	200~750VDC
	Output Current Range	0 to 25A @ 200-600Vdc @ 25A max,600-750Vdc constant power 15KW
	Output Overvoltage Protection	755Vdc ~ 765Vdc
	Output Under Voltage Protection	190Vdc ~ 200Vdc
	Short Circuit Protection	Yes
	Voltage Stabilised Accuracy	≤±1%
	Efficiency	≥93%@ Rated input, rated output
AC Output	Rated AC Output Voltage	380V AC
	AC Output Voltage Range	304Vac~456Vac
	Output current range	0~20A
	Output Power	10KW
Communication & Alarm	Communication	CAN
	Alarm & Status	Display on LED panel
Operating Environment	Operating Temperature	-40°C ~ 60°C derating from 50°C t0 60°C linearly by 20%
	Overtemperature Protection	>60°C@ Auto recoverable when temperature drops to 60 or below
	Storage Temperature	-40°C ~ 70°C
	Humidity	≤ 90% @ 40 ±2
	Altitude	0 ~ 2000m
Mechanical	Acoustic Noise	< 55dB
	Cooling	Fan cooling
	Dimensions	306mm (H) x 84mm (W) x 449.7mm (L) +/-0.5mm
	Weight	< 13Kg
	MTBF	> 500,000 hours (40°C)

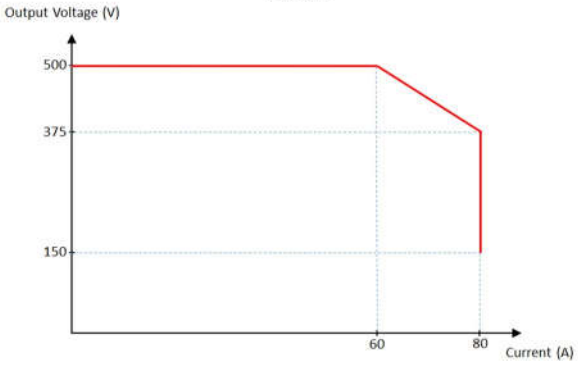
30kW Mono Directional AC/DC Converter

A family of 30KW AC/DC Converters specifically designed for EV DC charging

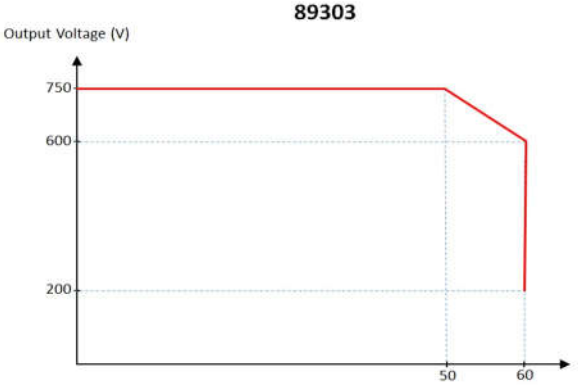
AC 3 phase input with a wide range of output voltages (150V to 1000V DC)

- Very High Efficiency
- Compact size
- Ultra-High Power Density
- Wide Output Voltage Range
- Small Output Ripple voltage ≤2V p-p
- Low Standby Power Consumption ≤11W
- Total Protection with alarm functions: input over/under voltage, output over voltage, over current, over temperature protection, output under voltage alarm, output short circuit protection
- LED Display
- Supports CAN, 485 bus communication, power modules can be grouped together by controller
- Battery current reverse protection
- Hot swap
- Discharge circuit inside

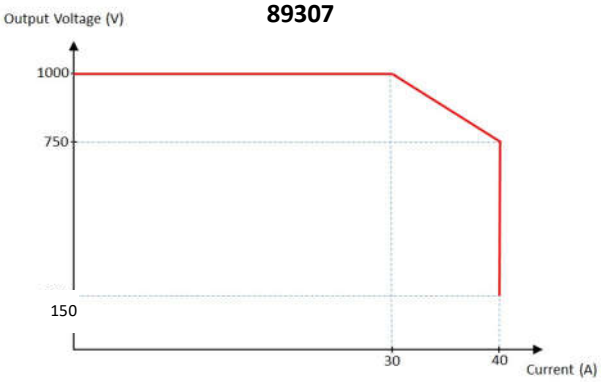
89302



89303



89307



30kW Mono Directional

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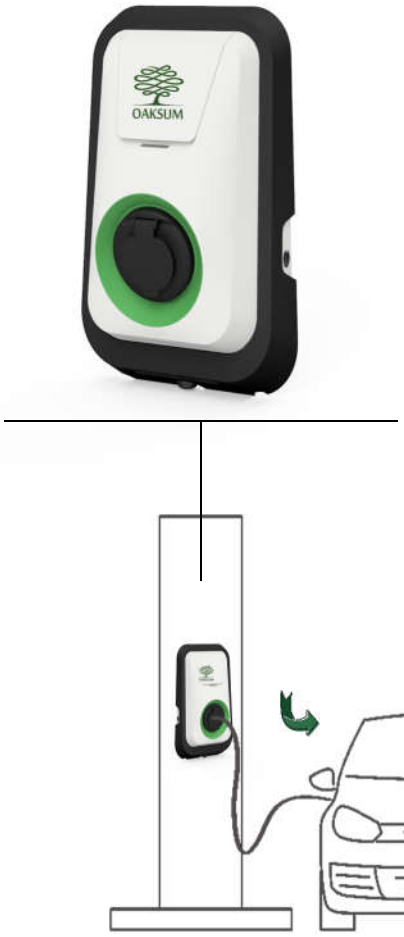
	Part Number	89302	89303	89307
AC Input	Input Voltage	260VAC ~ 530VAC 3 Phase without neutral		280VAC~480VAC
	Input Frequency	45Hz ~ 65Hz	45Hz ~ 65Hz	50Hz ~ 60Hz
	Max. Input Current	< 61A	< 61A	< 61A
	Power Factor	Rated output load ≥ 0.99		
	THD	≤ 5%	≤ 5%	≤ 5%
	Input Under Voltage Protection	255V ±5V	255V ±5V	270V ±10V
	Input Overvoltage Protection	535V ±5V	535V ±5V	490V ±10V
	Input Power Derating	260V ±5V < Vin <304V ±5V		/
		Linear power derating from 100% to 50%		/
DC Output	Rated Output	500V/60A	750V/40A	30A (100A max.)
	Constant Power Range	30KW@400~500V	30KW@600~750V	30KW@790~1000V
	Output Voltage Range	150 ~ 500V	200 ~ 750V	150 ~ 1000V
	Output Current Range	0 ~ 80A	0 ~ 50A	0 ~ 100A
	Output Overvoltage Protection	510V ±5V	760V ±5V	1010V ±5V
	Output Under Voltage Alarm	140V ±2V	190V ±2V	190V ±2V
	Short Circuit Protection	Output current decreases when short circuit occurs		
	Voltage Stabilised Accuracy	≤±0.5%	≤±0.5%	≤±0.5%
	Load sharing	≤±3%	≤±3%	≤±3%
	Max Startup Overshoot	≤± 1%	≤± 1%	≤± 1%
	Current Stabilised Accuracy	≤± 1%	≤± 1%	≤± 1%
	Start Up Time	normally 3s≤t≥8s	normally 3s≤t≥8s	normally 1s≤ t ≥10s
	Efficiency	Highest efficiency >96%, Rated efficiency >95%		
Communication & Alarm	Communication	CAN & 485	CAN & 485	CAN & 485
	Max number of parallel converters	60 converters	60 converters	60 converters
	Alarm & Status	Display with digital tubes and LED		
Operating Environment	Operating Temperature	-30°C ~ 70°C derating from 55°C	-40°C ~ 75°C derating from 55°C	
	Over temperature Protection	At temperature > 70°C ±4°C or < -40°C ±4°C power converter will shut down automatically		
	Storage Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +75°C
	Humidity	≤ 95% RH without condensation		
	Altitude	79kPa ~ 106kPa/2000m		
Mechanical Characteristics	Acoustic Noise	< 60dB	< 60dB	< 70dB
	Cooling	Fan cooling	Fan cooling	Fan cooling
	Dimensions	300mm (H) x 84mm (W) x 437.5mm (L)		refer to datasheet
	Weight	< 15Kg	< 15Kg	< 15Kg
	MTBF	> 500,000 hours (40°C)		> 300,000 hours (25°C)

AC-AC Smart EV Chargers



The OAKSUM Smart AC-AC EV Chargers are installed in numerous areas such as home customers, car parks, fleet management business, hotels and many other locations.

The design is optimized for maximum charging performance combined with high energy efficiency.

The IP65 casing gives a robust and compact weather-proof construction, suitable for both indoor and outdoor installations.

The Smart EV Chargers also include the capability for various authorization methods such as RFID, Wireless communication and key switches.

OASKUM offers customized solutions for the Smart EV Charger, including a choice of case colour, customers logo and branding.

- Power Ratings from 3.6KW up to 22KW
- Charging speeds up to 8x faster than standard charging models
- System payment integration
- Customized solutions
- Safety standards compliance
- Weather proof construction
- Simple installation
- Low maintenance
- 3 year warranty

AC-AC Smart EV Chargers

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AC-AC Smart Chargers specification

	91003	91007	91011	91022
Output Power	3.6kW Single Phase	7.4kW Single Phase	11kW 3 Phase TN Network	22kW 3 Phase TN Network
Output Current	16A	32A	16A x 3	32A x 3
Outlet Socket	Type 2 (ISO-62196-2)			
Safety Protection	Built in 6mA DC RCD(A type),PME fault detection,surge protection.			
Required Protection	20A Type A RCBO	40A Type A RCBO	20A 3 Pole Type A RCBO	40A 3 Pole Type A RCBO
Environmental Protection	Charger - IP65, Socket - IP54			
RFID	ISO 14443A, ISO 14443B, MIFARE			
Key	*Available on request*			
Connectivity(Optional)	Integrated RFID reader, NFC function,2.4Ghz WiFi, Bluetooth,Ethernet			
EV Charging Compliance	Safety: EN61851-1,EN61851-22,EN62196,RCD EN62955 EMC: EN301489-1,EN301489,EN301489-17			
Charge Protocol	Mode 3 IEC 61851-1 Annex D (LIN-CP) ISO 15118 Ready			
OCPP	OCPP1.6J *(JSON over websockets)*			
ISO 15118 - V2G	*Vehicle to Grid and Plug and Charge Optional*			
Metering	Built-in <1% energy meter			
Phase Balancing	N/A	N/A	Yes	Yes
Load Balancing	*Optional*			
Charger Status	LED			
Mounting	Wall			
Operating Temperature	-35 to +55°C			
Dimensions	400x240x160mm			
Weight	2.9kg			
Gland	11-14mm Cable Diameter			14-18mm Cable
Housing	UV Resistant ABS			

Mini AC-AC Adjustable EV Charger

For consumer EV Charging applications, where the speed of charging is not critical, the OAKSUM Mini range offers one of the most cost effective available solutions.

A 5xA adjustable ratings and easy to install charger gives the possibilities for powers from 2.3KW up to 7.0KW.

With CE compliance to EN61851 (2017) the OAKSUM Mini EV Charger range gives the customer piece of mind for affordable safe charging. In order to charge more securely and faster than normal power outlets, you need a home charging box. This basic charging box is for those who are concerned with having a simple, affordable and safe solution for charging their electric car.

Technical Specifications

Mode	2
IP-Rating	IP65
Power Rating	Power Rating: 2.3KW to 7.0KW (single phase).
Current Settings	5x Step adjustable charging current (Amps: 10A,16, 20, 24,32A);
Features	Charging for delay(12hrs max); Built-in over current &6mA DC leakage protection; PEN fault detection; OTP; OVP.
Status Lights	LEDs with Free, Connected & Charging
Width	110mm
Height	60mm
Length	240mm
Operating Temp.	-25℃ to +50℃
Compliance	Safety:EN61851-1,EN61851-22;
	EMC:EN301489-1,EN301489-3,EN301489-17; LVD:EN62368-1;

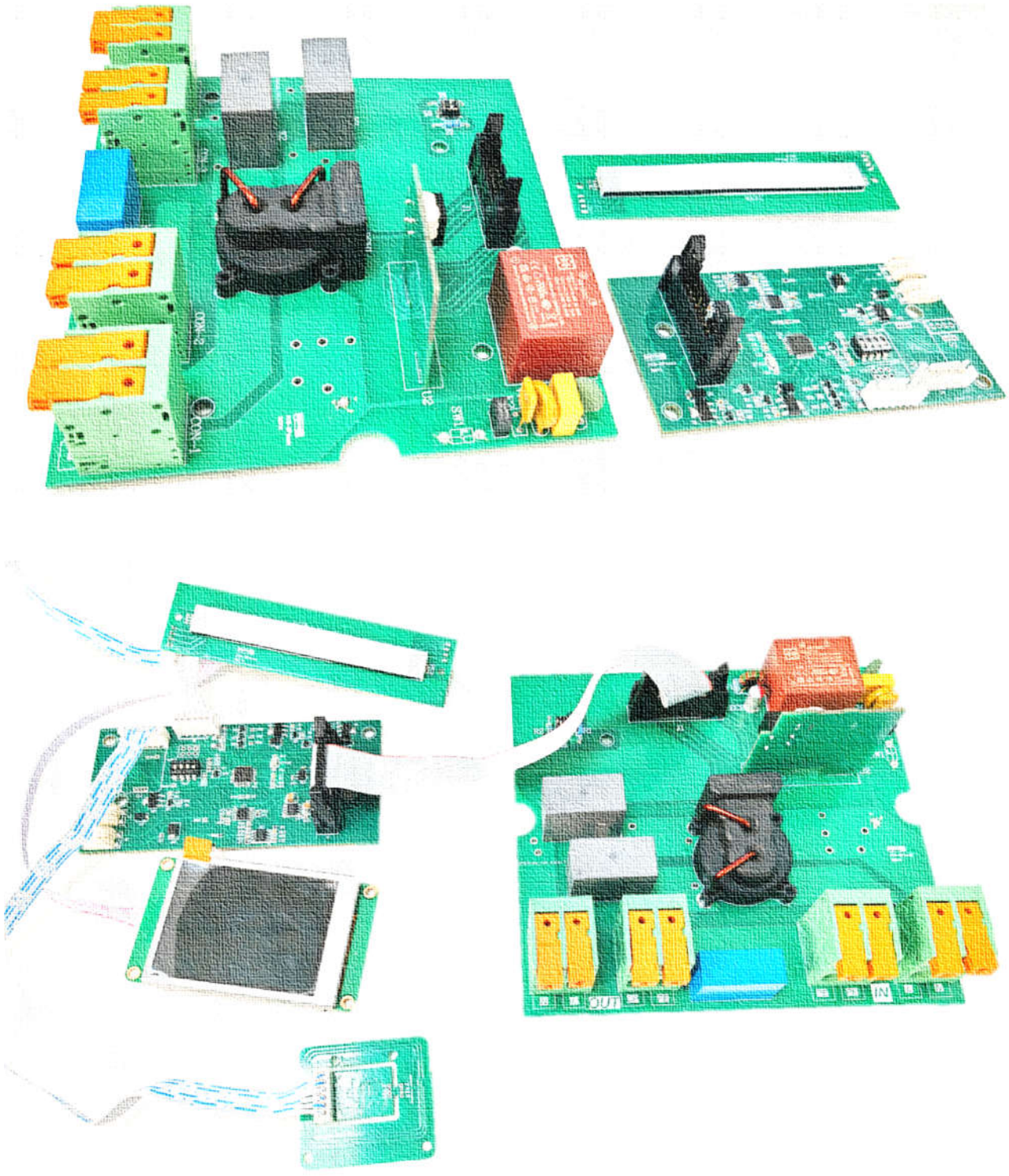
OAKSUM

Hybrid Solar Inverters

Power Rating		2kw to 5kw(1-phase in/1-phase out) ; 10kw to 15kw (3- phase in/ 3-phase out)
IP Rating		IP65 waterproof
PV INPUT		300VDC TO 1000VDC
Grid Output		88 to 265Vac for single phase products ; 230VAC(P-N)/400VAC(P-P) for three phase products
Built-in WiFi for mobile monitoring		
Dual outputs for smart load management		
Adjustable charging current		
Parallel operation up to 6 unites		
Operating Temperature -10℃ to +55℃		

OAKSUM

Controller PCBA- Full Kit



Smart (OCPP) – RFID, LEDs, CTs, RCD, GSM, touchscreen, PEN Protection

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