



Modules and Components
for Charging Systems

AC-DC Power Converters

AC-AC Chargers for EV



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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 250KW, 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 customer's 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 Group.

As part of the £440M discoverIE Group plc, 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.

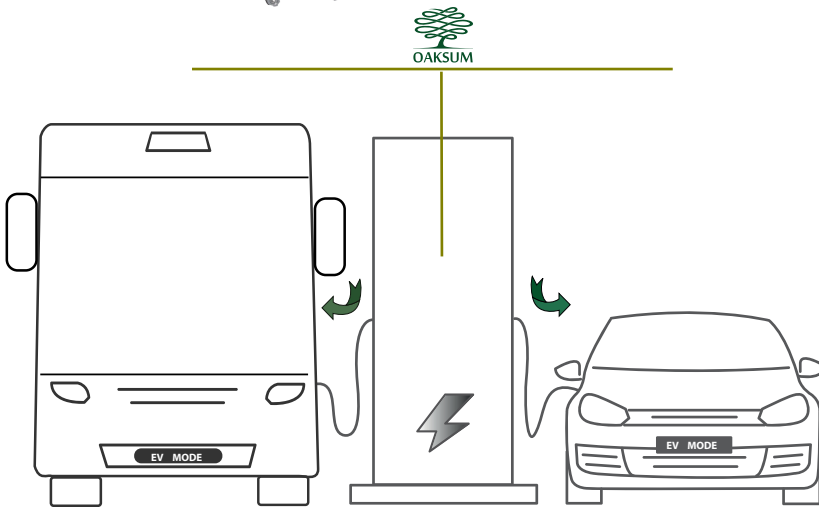
AC-DC Power Converters



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 $\geq 95\%$
- 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



15kW Mono Directional AC/DC Converter

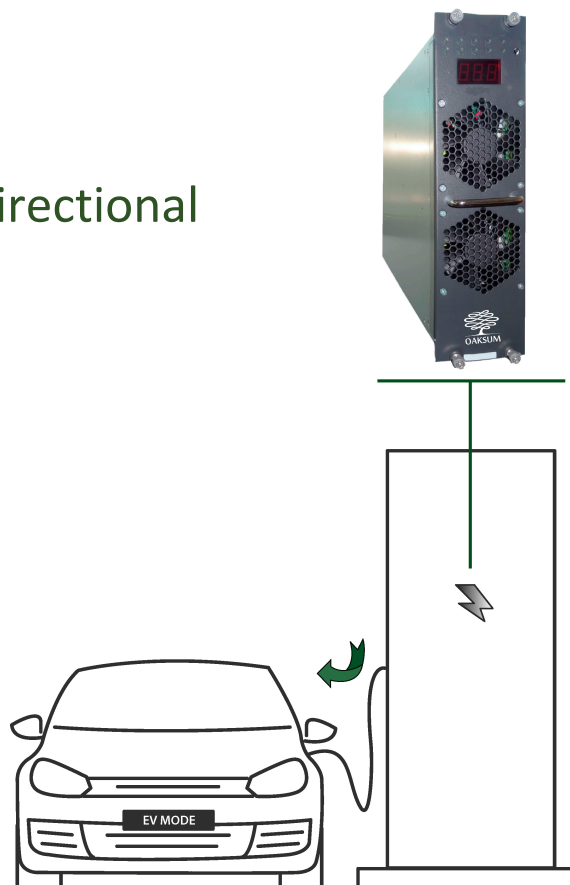


15KW AC/DC Converter specifically designed for EV DC charging AC 3 phase input

with a wide range of output voltages (30V to 1000V DC)

- Very High Efficiency
- Compact size
- Ultra-High Power Density
- Wide Output Voltage Range Small Output Ripple voltage $\leq 2V$ p-p
- Low Standby Power Consumption $\leq 10W$
- 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

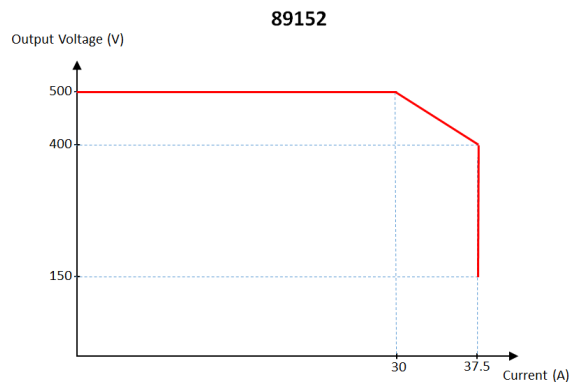
15kW Mono-Directional



15kW Mono Directional



	Part Number	88151
AC Input	Input Voltage Range	156V to 502V 3 phase
	Max Input Current	< 30A
	Frequency range	45 to 65 Hz
	Power Factor	≥ 0.99
	Efficiency	≥ 95% (Rated input, half load)
DC Output	Output Voltage Range	250V to 750V DC
	Output Current	0 to 22A
	Current Share	≤ +/- 0.5% (304V to 502V load 50-100%)
	Voltage Load Regulation	≤ +/- 0.5%
Control	Communication	CAN Bus
	Indication Light (LED)	Green: normal, Yellow: alarm, Red : failure
Alarm & Protection	Input Over/Under voltage	Automatic Shutdown & Auto recover
	Output Over Voltage	Automatic Shutdown & Lock
	Short Circuit Protection	Endure Long Term Short & Auto Recover
	Over Temperature Protection	Automatic Shutdown & Auto recover
Safety & EMC	Dialectric Strength	Input - output 3535Vdc/30mA/1 min
	Isolation	Input - output ≥ 10MΩ@500Vdc
	EMC	Class A
Environmental	Ambient Temperature	-25'C to +60'C (derating from +50'C)
	Storage Temperature	-40'C to +70'C
	Humidity	≤ 90 (≤ 95 for storage)
	Cooling	Forced Cooling
	Altitude	≤ 4000m
Mechanical	Dimensions	428mm x 296mm x 84mm
	Weight	11Kgs



15kW Bi-Directional AC/DC Converter

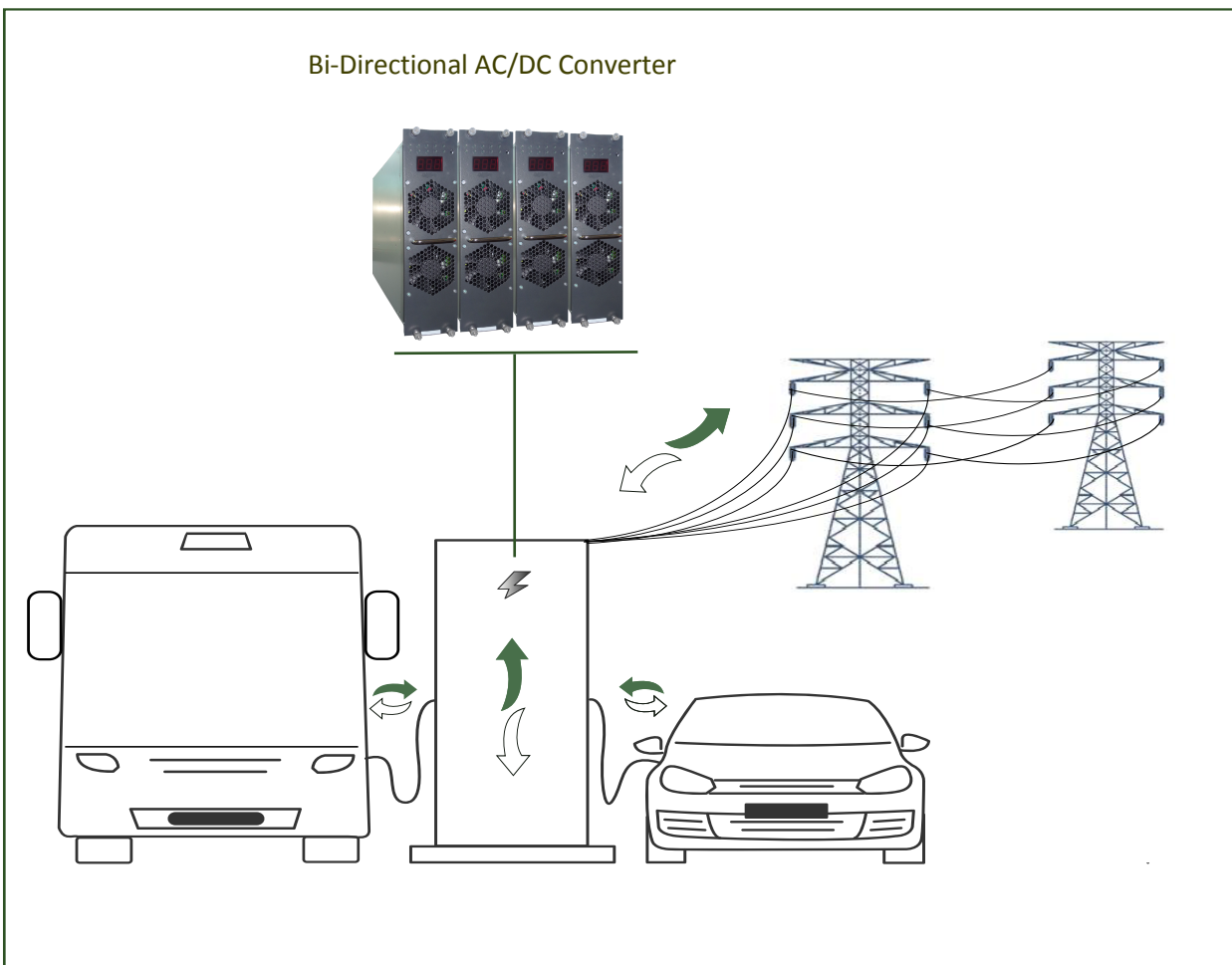


An isolated 15KW Bi-Directional AC/DC Converter

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



15kW Bi-Directional AC/DC Converter



	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 \geq 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	$\leq \pm 1\%$
	Efficiency	$\geq 93\%$ @ 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 to 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	$\leq 90\%$ @ 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)

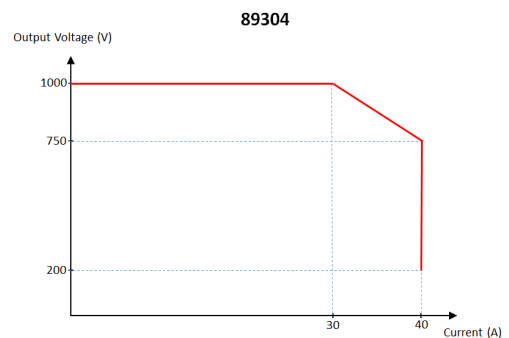
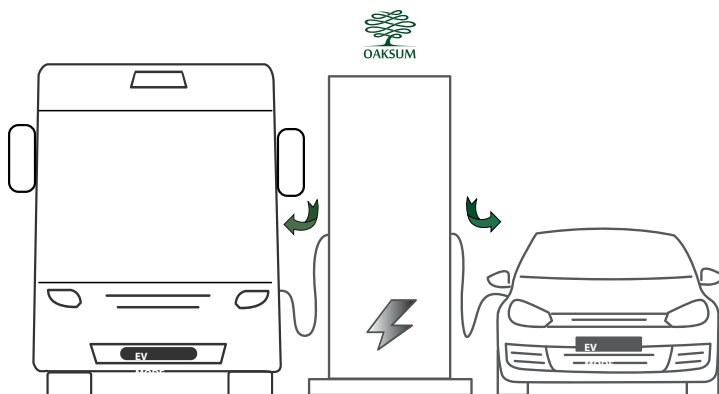
30kW Mono Directional AC/DC Converter



30KW AC/DC Converters specifically designed for EV DC charging AC 3 phase input

with a wide range of output voltages (200V to 1000V DC)

- Very High Efficiency
- Compact size
- Ultra-High Power Density
- Wide Output Voltage Range
- Small Output Ripple voltage $\leq 2V$ p-p
- Low Standby Power Consumption $\leq 11W$
- 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



30kW Mono Directional



	Part Number	89304
AC Input	Input Voltage	260VAC ~ 530VAC 3 Phase without neutral
	Input Frequency	45Hz ~ 65Hz
	Max. Input Current	< 61A
	Power Factor	Rated output load \geq 0.99
	THD	\leq 5%
	Input Under Voltage Protection	255V \pm 5V
	Input Overvoltage Protection	535V \pm 5V
	Input Power Derating	260V \pm 5V < Vin < 304V \pm 5V Linear power derating from 100% to 50%
DC Output	Rated Output	1000V/30A
	Constant Power Range	30KW@790~1000V
	Output Voltage Range	200 ~ 1000V
	Output Current Range	0 ~ 40A
	Output Overvoltage Protection	1010V \pm 5V
	Output Under Voltage Alarm	190V \pm 2V
	Short Circuit Protection	Output current decreases when short circuit occurs
	Voltage Stabilised Accuracy	$\leq \pm 0.5\%$
	Load sharing	$\leq \pm 3\%$
	Max Startup Overshoot	$\leq \pm 1\%$
	Current Stabilised Accuracy	$\leq \pm 1\%$
	Start Up Time	normally 3s $\leq t \leq$ 8s
	Efficiency	Highest efficiency >96%, Rated efficiency >95%
Communication & Alarm	Communication	CAN & 485
	Max number of parallel converters	60 converters
	Alarm & Status	Display with digital tubes and LED
Operating Environment	Operating Temperature	-30°C ~ 70°C derating from 55°C
	Overtemperature Protection	At temperature > 70°C $\pm 4^\circ\text{C}$ or < -40°C $\pm 4^\circ\text{C}$ power converter will shut down automatically
	Storage Temperature	-40°C ~ 85°C
	Humidity	\leq 95% RH without condensation
	Altitude	79kPa ~ 106kPa/2000m
Mechanical Characteristics	Acoustic Noise	< 60dB
	Cooling	Fan cooling
	Dimensions	300mm (H) x 84mm (W) x 437.5mm (L)
	Weight	< 15Kg
	MTBF	> 500,000 hours (40°C)
Compliance	CE	certification in process

AC-AC Smart EV Chargers

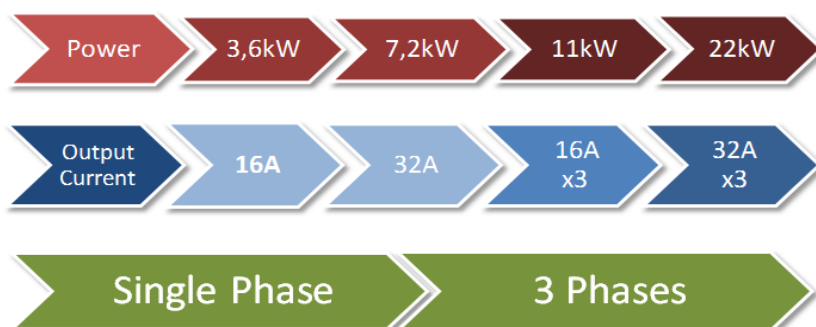
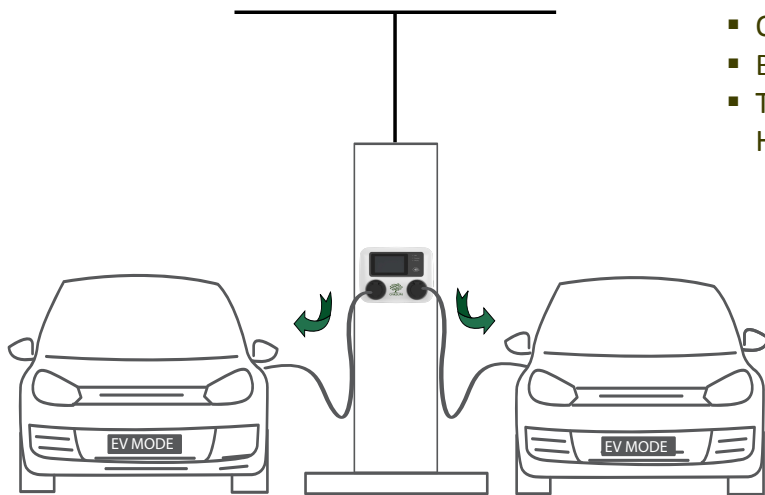


The OAKSUM Smart AC-AC EV Chargers are installed in numerous areas such as home customers, car parks, fleet management business, hotels and many other locations. The models are available for an input of either single or 3 phase in dual output format. The output currents can be limited to a maximum level to suit the installation whilst the dual output can provide power up to 22KW simultaneously on each socket.

The IP65 casing gives a robust and compact weather-proof construction, suitable for both indoor and outdoor installations whilst the IK10 rating gives robust protection. A 7" colour screen provides a user interface whilst an integrated RFID reader supports user identification (an optional MID-meter enables financial settlement).

Internet connection is via GPRS or Ethernet to allow the unit to be connected to the customer's parent system or charging station management platform using the OCPP protocol. OAKSUM offers customized solutions for the Smart EVChargers, including a choice of case colour, customers logo and branding.

- Mode 3 / Type 2 Cable
- Compact Size – 286mm x 292mm x 121mm
- For residential and commercial use
- Up to 2 x 22kW (32 A 3-phase)
- Load balancing on both sockets
- Current limiting setting available
- Compact weather-proof construction
- Wall-mounted or Pedestal
- LCD Colour Display
- RFID Access
- OCPP Support - OCPP 1.2/1.5/1.6/2.0
- Built-in Type A RCD
- Tethered Cables available as an option with Holsters



AC-AC Smart EV Chargers



	Part Numbers			
	93121	93122	93321	93322
Electrical Characteristics				
Output Power	3.6kW 1 Phase	7.2kW 1 Phase	11kW 3 Phase	22kW 3 Phase
Output Current	16A	32A	16A x 3	32A x 3
Required Protection (External)	20A	40A	20A 3 Pole	40A 3 Pole
Outlets	Type A RCBO Dual Port			
Charge Mode	Mode 3 (IEC 61851-1)			
Nominal Supply – 3 Phases	230/400V, 50 Hz			
Charging Power Rating	3.6 kW, 7.2 kW, 11 kW, 22 kW			
Over Current Protection	40A Supply			
Current Rating	16A or 32A			
Standby Power Consumption	~3W			
Ground Fault Detection	Internal RCBO type A + 6 mA DC protection			
Supply Connections (1 or 3 Phase)	L1, L2, L3, N, PE 2.5 - 10mm ²			
Functional Interfaces				
LCD Display	7" full colour, 640x480, 30 fps full motion video, active matrix, UV protected			
Language Support	Languages supported: English, Dutch, German			
MID Meter	Supported/Optional			
PTB/Eichrecht Conformity	Pending			
Card Reader	RFID ISO 15693, 14443, NFC			
Communication Interface	OCPP 1.5/1.6/2.0 (future)			
Local Area Network	Ethernet (WiFi as an optional extra)			
Wide Area Network	3G GSM, 3G CDMA			
Safety and Operational Ratings				
EMC Compliance	FCC Part 15 Class A			
Operating Temperature	-30°C to +50°C			
Operating Humidity	up to 85% @ +50°C non-condensing			
Non-Operating Humidity	up to 95% @ +50°C non-condensing			
Mechanical Data				
Socket	IEC 62196 Type 2, 32A, IP54 hinged lid, locking			
Charging Cable	Type 2 according to IEC 62196-1 and IEC 62196-2			
Overhead Cable Management System	Optional			
Mounting Location	Wall or Column			
Dimensions (WxHxD)	286mm x 292mm x 121mm			
Weight	<4kg			
IP-class / IK-Class	IP65 / IK10			
Holster	Only on tethered version			
Compliance				
Product Certification	CE			

Mini AC-AC EV Charger



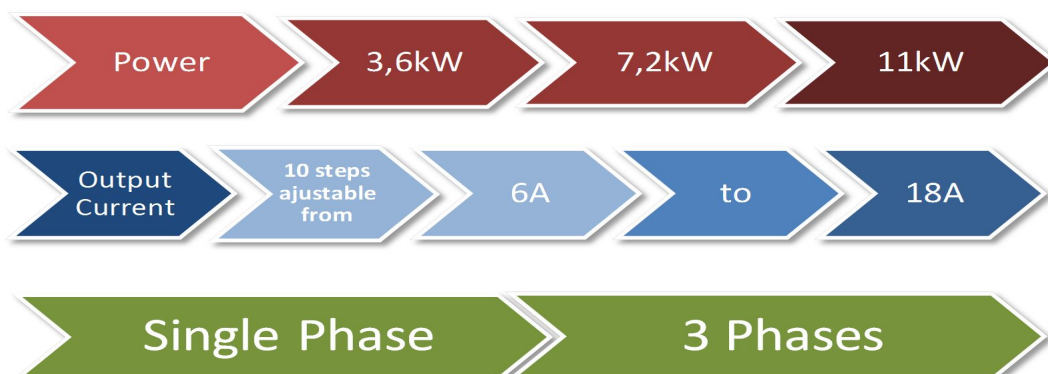
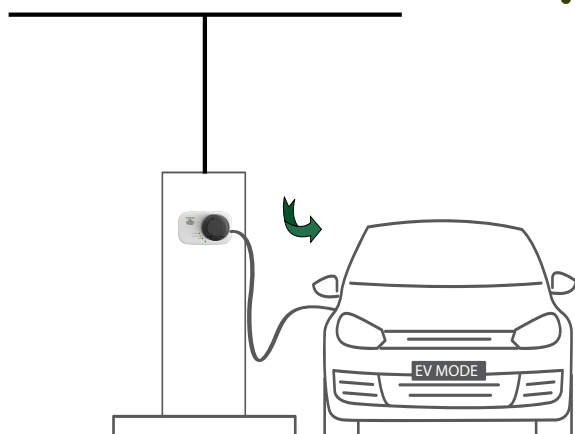
For consumer EV Charging applications, where the speed of charging is not critical, the OAKSUM Mini range offers one of the most cost effective available solutions.

A simple to operate and easy to install charger gives the possibilities for powers from 3.6KW up to 11KW.

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.



- Mode 3, IEC61581-1
- Compact size – 210mm x 130mm x 95mm
- Simple and quick electrical Installation
- For residential and commercial use
- From 3.6 kW 1 Phase to 11 kW 3 Phase
- Weather-proof construction
- Built-in RCD
- Durable, low maintenance enclosure
- Suitable for Charging Cable Type 2
- Tethered Cable option available



Mini AC-AC EV Charger



	92101	92102	92301
Electrical Characteristics			
Output Power	3.6kW 1 Phase	7.2kW 1 Phase	11kW 3 Phase
Output Current	16A	32A	16A x 3
Required Protection (External)	20A Type A RCBO	32A Type A RCBO	20A 3 Pole Type A RCBO
Outlet	1	1	1
Mode	3 (IEC 61851-1 / SAE J1772 compliant communication protocol)		
Cable Type	Type 2 (IEC 62196)		
Current Settings	10-Step adjustable charging current (Amps: 6, 7, 8, 9, 10, 13, 14, 15, 16, 18)		
Earth Leakage Protection	Built-in ground fault sensor (RCD-DD for DC current max 6 mA)		
Status Lights	LEDs with Clear, Connected & Charging		
Phases	Single or 3 Phases		
Nominal Supply	230VAC 50Hz / 415VAC 50Hz		
Supply Connections	L1, L2, L3, N, PE 2.5 - 10mm2		
Over Current Protection	40A Supply		
Standby Power Consumption	~3W		
Socket	IEC 62196 Type 2, IP54 hinged lid, non-locking		
Supply Cable Entry	Ø20mm or Ø25mm hole drilled at site through bottom of enclosure		
Mechanical Data			
Dimensions (WxHxD)	210mm x 130mm x 95mm		
Unit Weight	<1.5kg		
Mounting Location	Wall Mounted, Indoor or Outdoor (permanent mounting)		
Ambient Temperature	-10°C to +50°C		
Operating Humidity	5 to 95%		
Enclosure	ABS (UL94 HB Fire Rated), IK08		
Protection	IP65		
Compliance	CE Marked		
	Compliance with NEK IEC 61851-1 (2017) and EU Directive 2014/35 / EU		
Options	Tethered Type 2 plug connector, 5m cable		
	Own Logo		
	Own Colour		





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