

# SmartCharger

## По вопросам продаж и поддержки обращайтесь:

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Барнаул (3852)73-04-60  
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## SC300 / 500 SmartCharger

Intelligent charger for lead acid / AGM / VRLA / LiFePO4 batteries



Abbildung ähnlich / device similar to figure



- 100% qualified for motor vehicles on-board electronic system / airbag
- Extensive protection functions and self-protection functions
- Short circuit and reverse polarity protection
- Protective functions against defect batteries
- Reliable sparking suppression
- Service interface (Mini USB)
- Electrical safety: EN60335, UL1236, CSA C22.2 No.107.2-01

- Modes:
- Charge Pb
  - Adaptive longterm charge Pb (LTC Pb)
  - Charge LiFe
  - Adaptive longterm charge LiFe (LTC LiFe)
  - Power supply (FSV)
  - PowerUp
  - Automatic cable compensation

Option: Country-specific version (e.g. mains cable)

Option: Customized charging parameters

On request: Customized modes

On request: Low temperature operation until – 40°C

On request: Water proof version acc. to IP65

On request: TS35 or screw mounting

SC300 / 500 - derivative table

Type	Input voltage	Typ. output voltage (configurable)*			Output current**	Cat. No.
		Charge Pb / LiFe	LTC*** Pb / LiFe	FSV****		
SC300-14	100-240 VAC	14,4 / 14,0 V	14,4 / 14,0 V	14,0 V	20 A	107143/20/000
SC500-14	100-240 VAC	14,4 / 14,0 V	14,4 / 14,0 V	14,0 V	35 A	107142/20/000

\* Charging voltages can be customized on request. The actual charging voltage depends on the prevailing operating state.

\*\* See functional description "current limiting"

\*\*\* Long term charge

\*\*\*\* Power supply mode

## 1 Input

<b>Input voltage range AC</b>	100 - 240 VAC	tolerance: 85 - 265 VAC
<b>Input frequency</b>	50 - 60 Hz	tolerance: 45 - 65 Hz
<b>Input voltage range DC</b>	140 - 340 VDC	tolerance: 130 - 350 VDC
<b>Inrush current</b>	No inrush current	active regulated current limitation ( $I_{inrush} < \text{current consumption at full load}$ )
<b>current consumption at full load</b>	< 4 A / < 6 A	SC300-14 / SC500-14 (see characteristic in fig. 7.2)
<b>Power factor</b>	> 0,95	typ. 0,98
<b>No-load power</b>	typ. 2 W typ. 4,2 W	On Standby (operating mode selection) With active load detection (see characteristic in fig. 7.3)

## 2 Output

<b>Output voltage</b>		see SC300 / 500 - derivative table on page 1
<b>Continuous output current</b>	max. 20 / 35 A	SC300-14 / SC500-14
<b>current limiting</b>	typ. $\pm 0,5\%$	of max. output current
<b>Output power</b>	< 300 / 515 W	SC300-14 / SC500-14 automatic power regulation depending on input voltage, ambient temperature and load condition, see characteristic in fig. 7.1
<b>Nominal output voltage <math>U_{nom}</math></b>	15,0 VDC	Reference value for tolerance specifications
<b>Initial tolerance <math>N_{initial}</math></b>	$U_{nom} \pm 0,5 \%$	-
<b>Load regulation tolerance <math>N_{load}</math></b>	$U_{nom} +0,5 \%$ / $-2,0 \%$	-
<b>Ripple &amp; Noise <math>N_{RN}</math></b>	< $\pm 1,8\% U_{nom}$	< 550 mVpp, typ. < 300 mVpp, 20 MHz measurement bandwidth
<b>Overall tolerance <math>N_{overall}</math></b>	$U_{nom} + 2,8 \%$ / $- 4,3 \%$	$N_{overall} = N_{initial} + N_{load} + N_{RN}$
<b>Load regulation dynamic (10-90%)</b>	< 10%	-
<b>Recovery time</b>	< 2 ms	-
<b>Temperature drift</b>	< 1% (-25 °C...+60 °C)	typ. 0,5% (-25 °C...+60 °C); typ. 0,2% (0...40 °C)

<b>Operating modes</b>	Charge Pb / Charge Pb LTC / Charge LiFe / Charge LiFe LTC / Power supply / PowerUp / Automatic cable compensation	Other modes on request. By default on delivery cable compensation is not activ
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## 3 EMC (Electromagnetic compatibility)

<b>RF-Emission</b>	EN55011	group 1, class B
<b>Harmonic current emissions</b>	EN61000-3-2	-
<b>Immunity</b>	EN61000-6-2	Immunity standard for industrial environments

## 4 Enviroment

<b>Operating temperature</b>	-25 °C...+60 °C	automatic output power derating
<b>Storage temperature</b>	-40 °C...+85 °C	-
<b>Humidity</b>	max. 95%	no operation in presence of dewing allowed
<b>Pollution degree</b>	2	acc. to EN50178
<b>Climatic category</b>	3K3	acc. to EN60721

## 5 General data

<b>Electrical safety</b>		EN60335, UL1236, CAN/CSA C22.2 No. 107.2-01
<b>Protective system</b>	Class I	-
<b>Isolation voltage</b>	3000 VAC 500 VDC	Input / output Output / enclosure
<b>Efficiency</b>	typ. 91%	see characteristic in fig. 7.4 und fig. 7.5
<b>Enclosure</b>		Metal (Aluminium), especially designed for car manufacturer and service stations. Plastic caps lateral.
<b>Service interface</b>	Mini-USB	-
<b>Dimensions</b>		see fig. 8.1
<b>Weight</b>	approx. 4,8 kg	without cables and nor package

## 6 Installation and Safety Instructions

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In addition to the general installation and safety instructions for SmartCharger, the following values and supplements apply:

<b>Cooling</b>	Natural convection	Temperature monitoring (Automatic electronic power reduction at too high temperatures due to insufficient or missing cooling)
<b>Mounting position</b>	-	any
<b>Connection Input</b>	IEC/EN 60320, C14	-
<b>Connection output</b>		approx. 3 m Charging cable with integrated plug contact / predetermined breaking point (on the device side a cable piece of approx. 1m is permanently mounted and a cable piece including charging tongs of approx. 2 m can be flexibly adapted)
<b>Input fuse</b>	F1 (10 A T)/250 V	(6,3x32 mm)
<b>Transient over voltage protection</b>	Varistor (6,5 kA / 190 J)	-
<b>Reverse polarity protection output</b>	-	In case of wrong polarity the charging process is interrupted

## 7 Characteristics

All shown characteristics were measured at 25 °C ambient temperature, an input voltage of 230 VAC and an input frequency of 50 Hz, unless otherwise indicated.

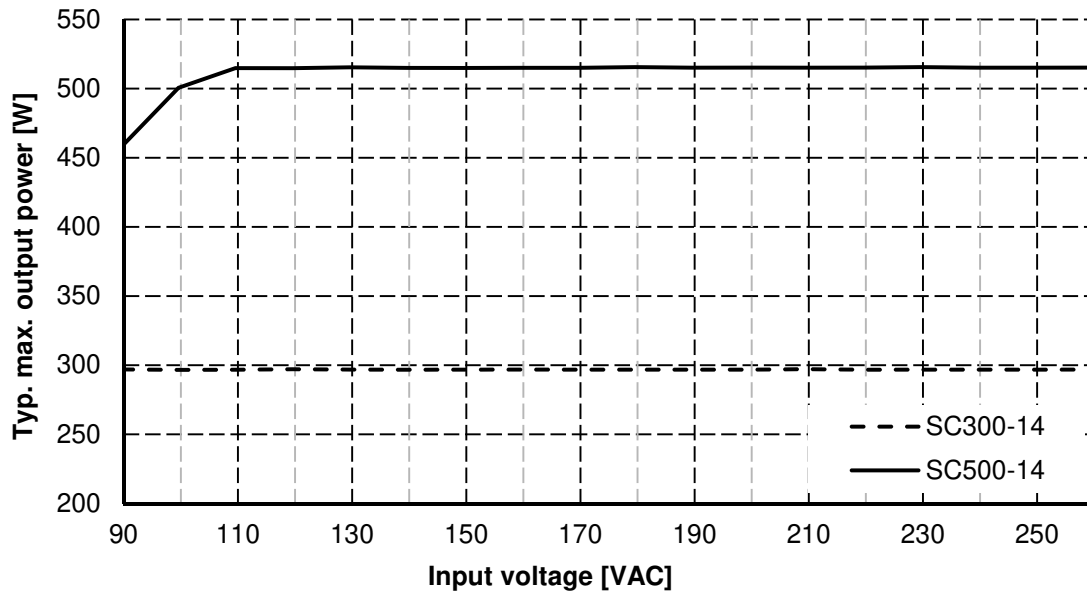


Figure 7.1: Maximum output power as a function of input voltage

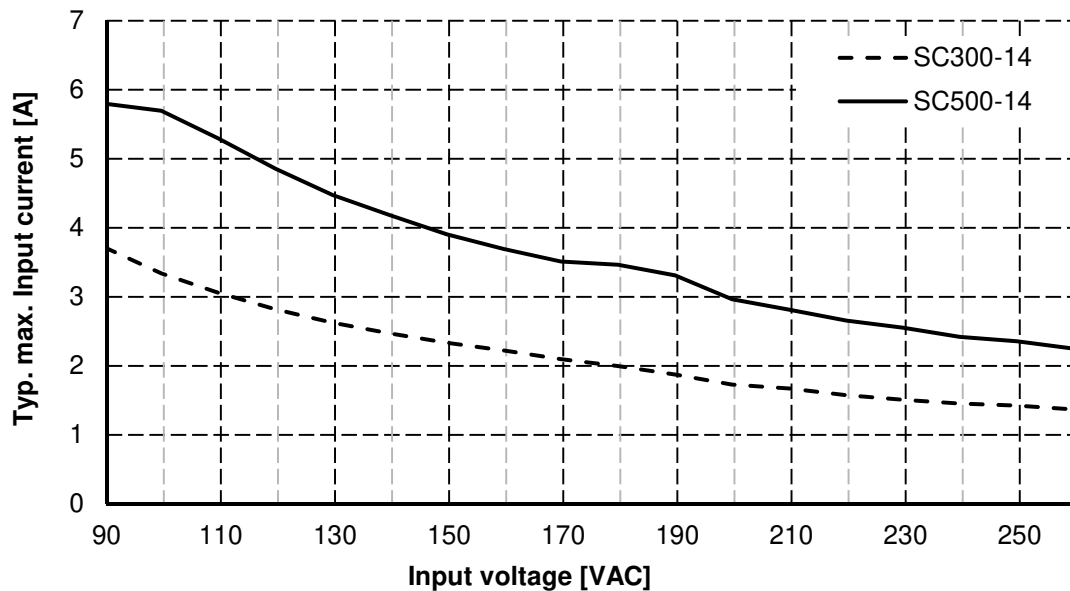


Figure 7.2: Maximum input current as a function of input voltage

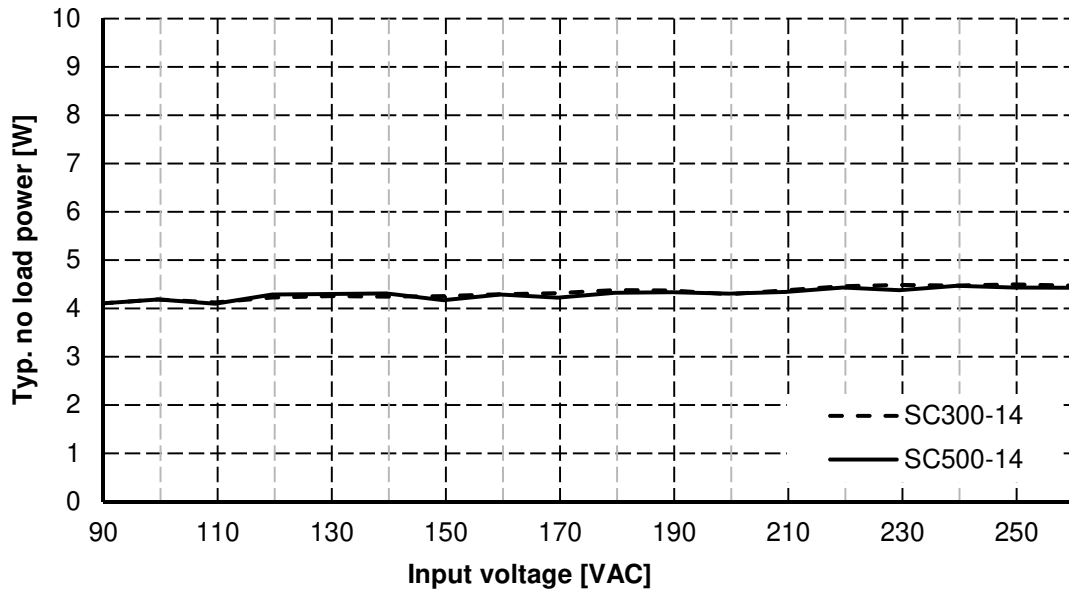


Figure 7.3: No-load power consumption as a function of input voltage

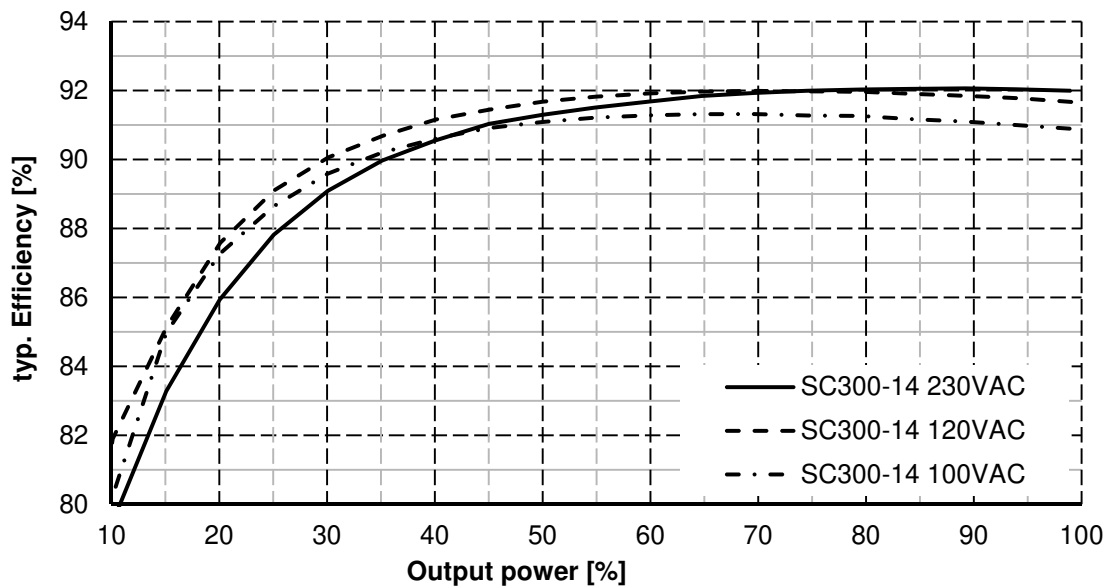


Figure 7.4: Typical efficiency SC300-14

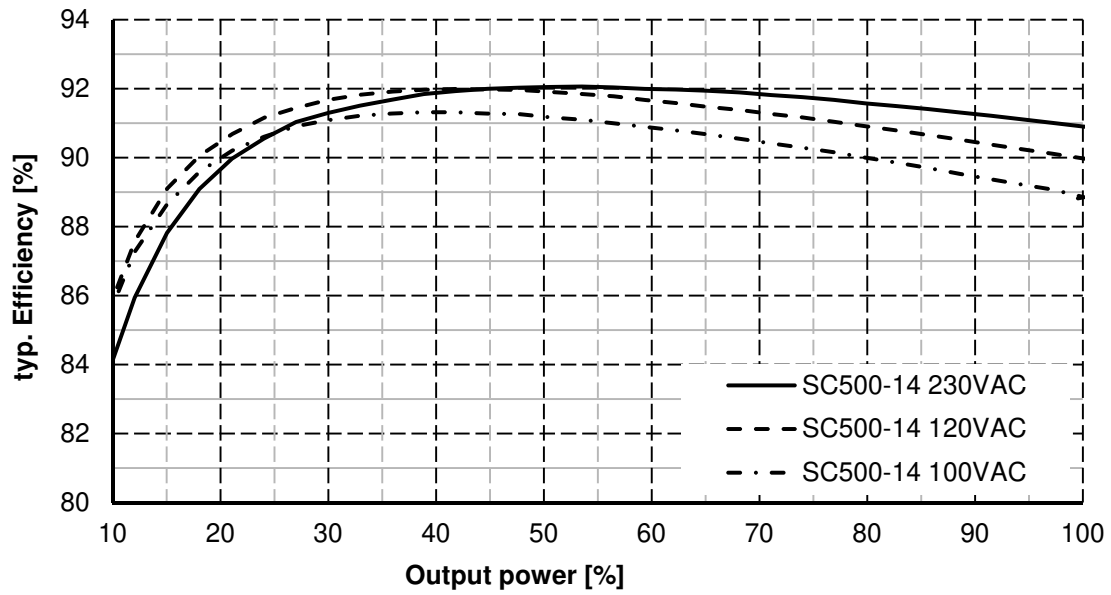


Figure 7.5: Typical efficiency SC500-14



## 8 Dimensions

All dimensions are given in millimeters and have a general tolerance according to DIN ISO 2768 - m. The integrated output cables (included in delivery) are not shown in this drawing.

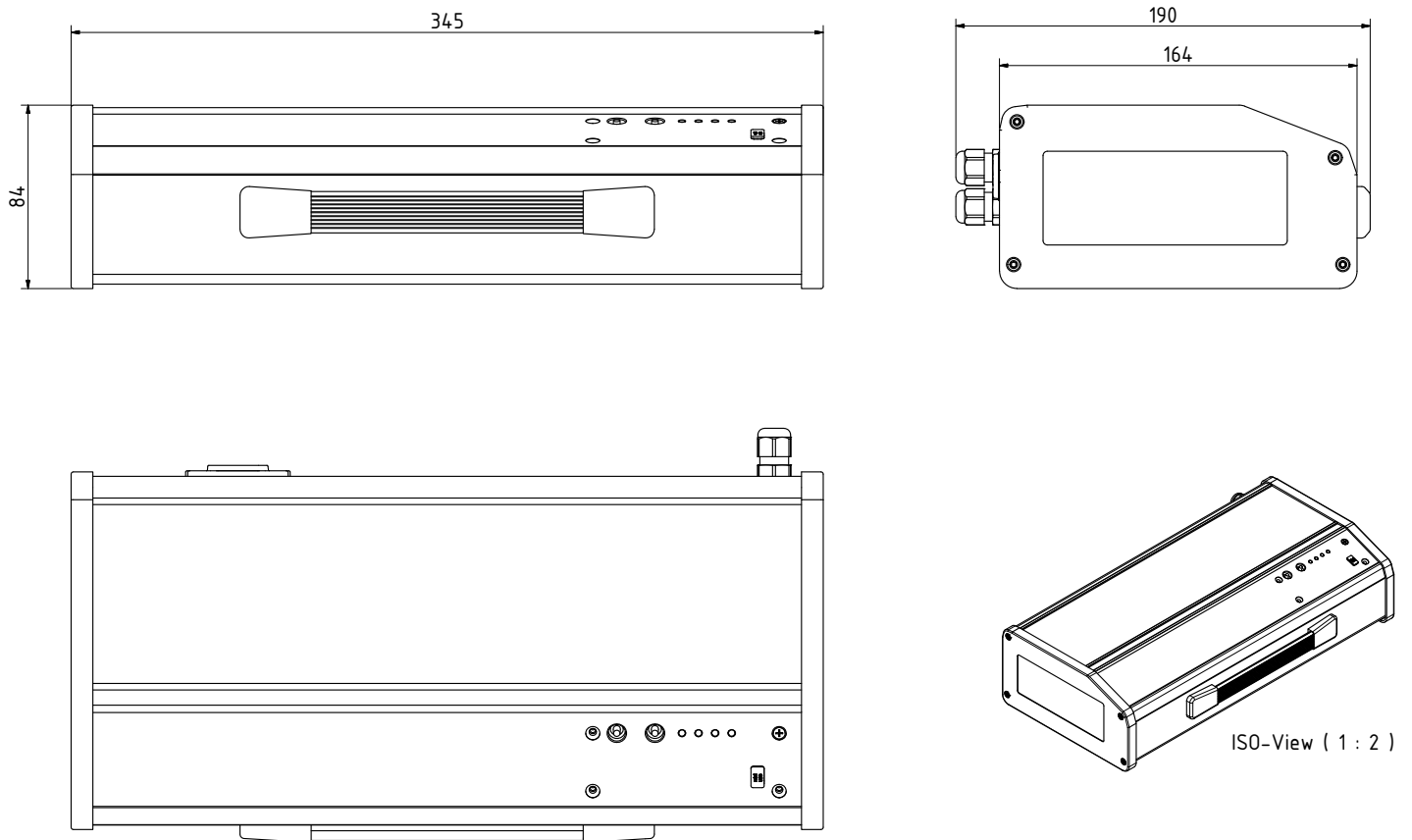


Figure 8.1: Dimensions

## 9 Function description

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### Features

Load detection, reverse polarity, short circuit and over voltage protection (OVP), cable compensation

### Output (Factory settings)

Output voltage monitored by OVP (Over Voltage Protection) and complete disable of output current if preset charging voltage limit is exceeded. Extensive functional description of the charger's features - see operating instructions.

### Charge Mode (Factory settings)

For more details on the individual modes, such as LTC Pb, LTC, LiFe, refer to the corresponding operating instructions.

### Current limiting

According to the operation state the current limit is automatically adjusted during operation.

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