

## Model 2045 LA

20 A max out • 230 VAC input

- 3-step charge control with timer
- High efficiency (> 83 %)
- Unaffected by fluctuations in mains voltage
- Temperature compensated charge voltage – external heat sensor
- Protected against reversed polarity and short circuit proof
- Leads with battery clips
- Waterproof (IP67) version available

### Notes:

Desktop unit

Heat-sink casing, Fixed cord

Standard DC output cord:

Batteryclips + temperature sense, L.1.35m, AWG 26,  
UL1061+2569

Available:

Waterproof (IP67) version

120 VAC version

Li-Ion and LiFePO4 versions



### Available versions

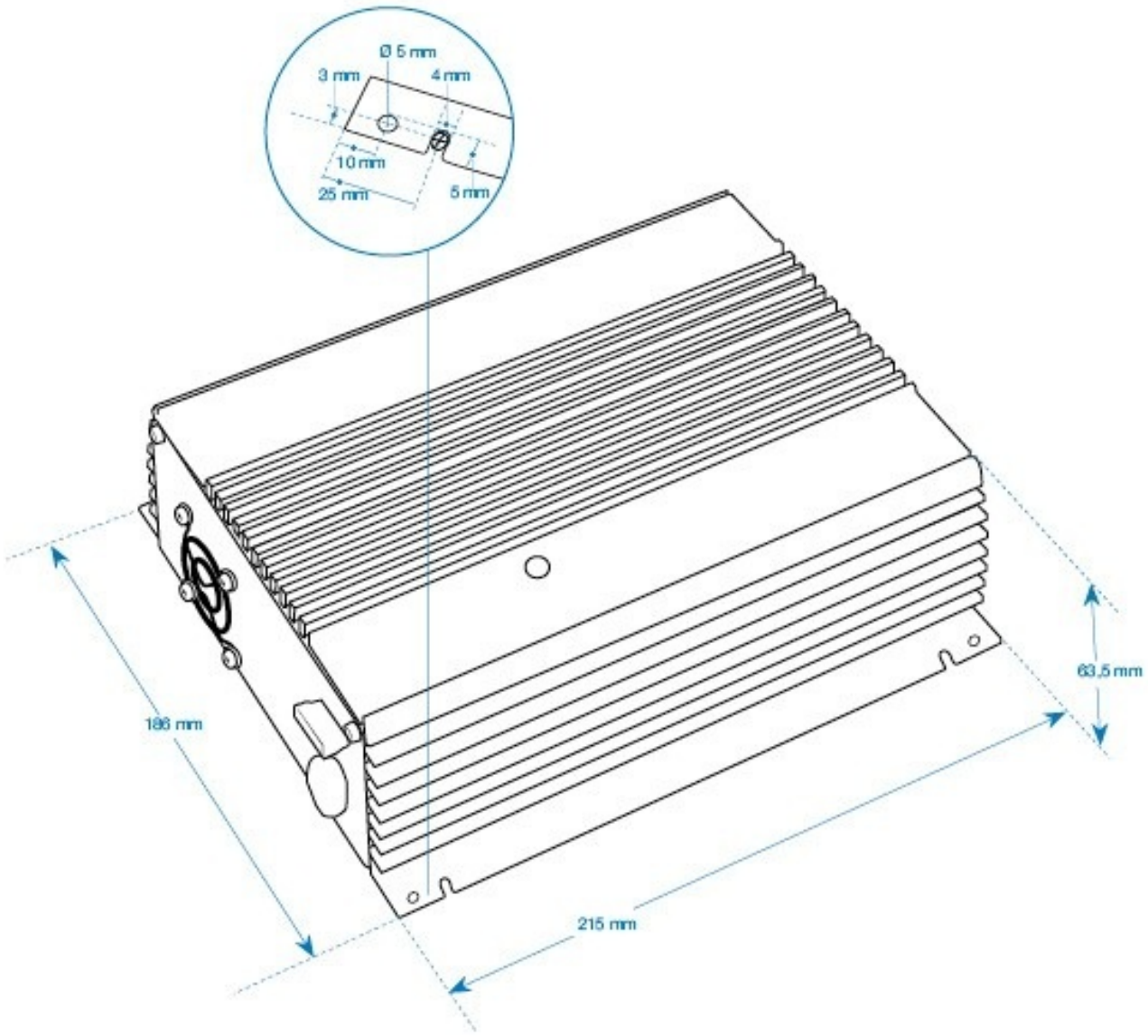
12V / 20A

24V / 10A

36V / 6,7A

48V / 5A

SPECIFICATIONS FOR Mascot type 2045 230V mains voltage:		12V	24V	36V	48V	
Input voltage:		198 - 264V AC	198 - 264V AC	198 - 264V AC	198 - 264V AC	
Line frequency:		47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	
Charge control:		3 step IUU	3 step IUU	3 step IUU	3 step IUU	
Charge voltage:	Timer mode:	14.7V	29.4V	44.1V	58.8V	
	Float mode:	13.7V	27.4V	41.1V	54.8V	
Temperature coefficient:		-3 to -4mV/°C pr. cell	-3 to -4mV/°C pr. cell	-3 to -4mV/°C pr. cell	-3 to -4mV/°C pr. cell	
Timer:		4 hours ± 30min.	4 hours ± 30min	4 hours ± 30min	4 hours ± 30min	
Charge current, boost mode:		20A	10A	6.7A	5A	
Input surge current limitation:		< 35A	< 35A	< 35A	< 35A	
Leakage current from battery with mains switched off:		< 0.5mA 12V battery voltage	< 0.5mA 24V battery voltage	< 0.5mA 36V battery voltage	< 0.5mA 48V battery voltage	
Ripple:		< 100mV p-p	< 100mV p-p	< 100mV p-p	< 100mV p-p	
Efficiency (at 100% charge current) approx.:		> 83%	> 85%	> 88%	> 88%	
Switch frequency approx.:		67kHz				
Temperature range:	*Operating:	-25 to +40°C				
	*Storage:	-25 to +85°C				
Protection:		Short circuit proof / Against reversed polarity / Over temperature protection				
Insulation class:		Class 1				
Insulation voltage:	Primary - ground:	1500V AC				
	Primary - secondary:	4000V AC				
	Secondary - ground:	500V AC				
Electrical Safety standards:		EN 60335-2-29				
EMC standards:		EN 50081-1, EN 55014, EN 50082-1				
IP-Grade:		20 PCB with components are protected with Coating				
Mains connection:		Mains cord				
Output terminals:		Leads with battery clips				
Indication:		3 colour LED	Red:	Constant current mode		
			Yellow:	Constant voltage, timer mode		
			Green:	Constant voltage, standby mode		
Dimensions (LxWxH):		215 × 186 × 63.5mm				
Weight:		2.32kg				



## Charging method C

### STEP 1 - BOOST CHARGE

To start a charge cycle, connect the charger to the mains.

The charger is in constant current mode, charging with the maximum current indicated on the charger, the LED-indication on the charger is ORANGE (or RED 9640).

This step allows rapid charging of your battery until the battery reaches typically 80 - 95% of its capacity.



### STEP 2 – TIMER CHARGE

The charger is in constant voltage mode, charging with a decreasing current.

The LED-indication on the charger is YELLOW. The charger is now in timer mode indicated by the YELLOW LED and will remain in this mode until time interval is completed.

The battery is charged to its full capacity at the end of this step.



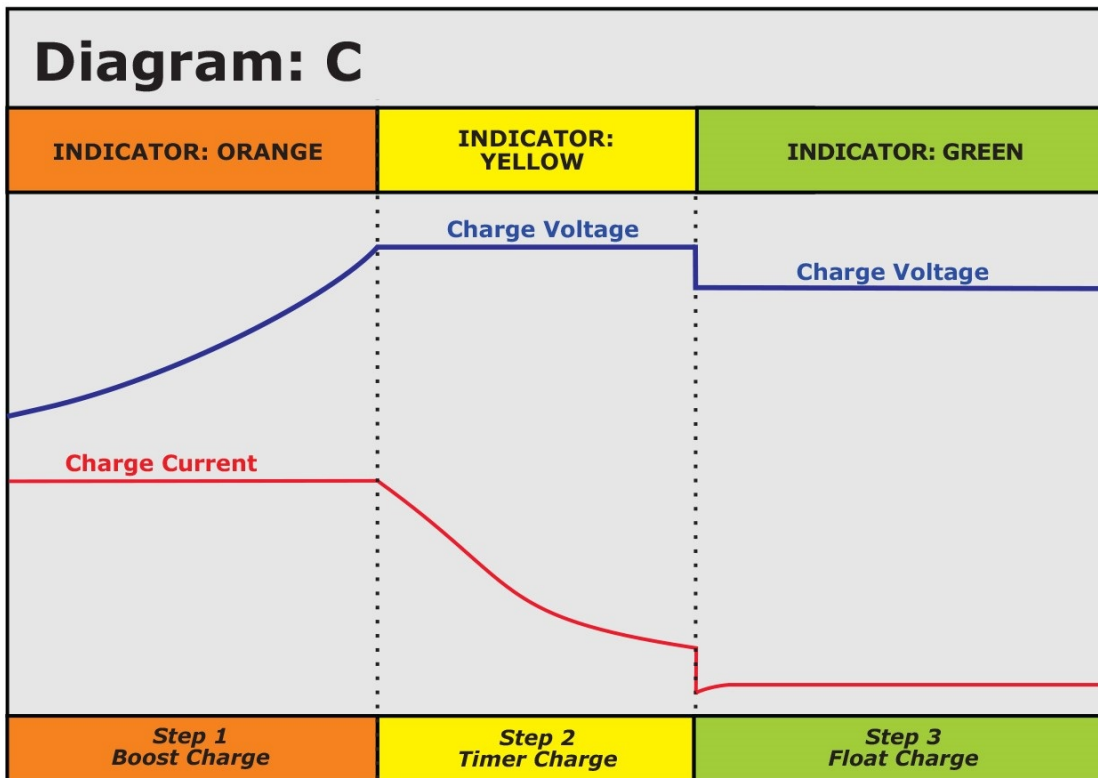
### STEP 3 – FLOAT CHARGE

The LED-indication on the charger is GREEN and the battery is fully charged.

The charger is in standby mode. The charge voltage is at standby level which means that the charger can continue to be connected to the battery.

The charger will return to boost charging if the battery is used.

A load current equal to the constant current level will initiate a new charge cycle.



# EU Declaration of Conformity



We, the responsible manufacturer;

Company Name:	Mascot Electronics AS		
Postal Address:	P.O.Box 177, N-1601 Fredrikstad, NORWAY		
Visiting Address:	Mosseveien 109, N-1624 Gressvik, NORWAY		
Telephone:	(+47) 69 36 43 00	E-mail:	sales@mascot.com
		WEB:	www.mascot.com

declare that this Declaration is issued under our sole responsibility and belongs to the following product(s):

Product:	Battery Charger for Lead-Acid Batteries																																																																						
Brand(s):	and/or <b>MASCOT</b> (may also carry additional customer name, logo or trade mark)																																																																						
Type/Model/UDI:	2044, 2045, 2944, 2945 & 2745																																																																						
Description:	<p><b>Input: 230VAC (model 2745: 100-120VAC auto range), max.3.6A, 50-60Hz, Class I</b></p> <table border="0"> <tr> <td colspan="2"><b>Output for Lead-Acid Batteries:</b></td> <td colspan="2"><b>Output for Li-Ion Batteries (2044 &amp; 2045 only):</b></td> </tr> <tr> <td>12V-version:</td> <td>max.14.7VDC max.20A</td> <td>1 cells-version:</td> <td>max.4.2VDC max.20A</td> </tr> <tr> <td>12V-version:</td> <td>max.14.7VDC max.25A</td> <td>2 cells-version:</td> <td>max.8.4VDC max.20A</td> </tr> <tr> <td>24V-version:</td> <td>max.29.4VDC max.10A</td> <td>3 cells-version:</td> <td>max.12.6VDC max.20A</td> </tr> <tr> <td>36V-version*:</td> <td>max.44.1VDC max.6.7A</td> <td>4 cells-version:</td> <td>max.16.8VDC max.15A</td> </tr> <tr> <td>48V-version*:</td> <td>max.58.8VDC max.5.0A</td> <td>5 cells-version:</td> <td>max.21.0VDC max.12A</td> </tr> <tr> <td></td> <td></td> <td>6 cells-version:</td> <td>max.25.2VDC max.10A</td> </tr> <tr> <td></td> <td></td> <td>7 cells-version:</td> <td>max.29.4VDC max.10A</td> </tr> <tr> <td></td> <td></td> <td>8 cells-version:</td> <td>max.33.6VDC max.8.5A</td> </tr> <tr> <td></td> <td></td> <td>9 cells-version:</td> <td>max.37.8VDC max.7.5A</td> </tr> <tr> <td></td> <td></td> <td>10 cells-version:</td> <td>max.42.0VDC max.7.0A</td> </tr> <tr> <td></td> <td></td> <td>11 cells-version*:</td> <td>max.46.2VDC max.6.0A</td> </tr> <tr> <td></td> <td></td> <td>12 cells-version*:</td> <td>max.50.4VDC max.5.5A</td> </tr> <tr> <td></td> <td></td> <td>13 cells-version*:</td> <td>max.54.6VDC max.5.3A</td> </tr> <tr> <td></td> <td></td> <td>14 cells-version*:</td> <td>max.58.8VDC max.5.0A</td> </tr> </table> <p><b>Output for LiFePO4 Batteries (2044 &amp; 2045 only):</b></p> <table border="0"> <tr> <td>4 cells-version:</td> <td>max.14.6VDC max.20A</td> </tr> <tr> <td>8 cells-version:</td> <td>max.29.2VDC max.10A</td> </tr> <tr> <td>12 cells-version*:</td> <td>max.43.8VDC max.6.7A</td> </tr> <tr> <td>16 cells-version*:</td> <td>max.58.4VDC max.5.0A</td> </tr> </table> <p>* NOTE: Versions with output voltage &gt;42.4 VDC are not within scope of standard EN 60335-2-29 Ed.4 (ref. Cl.10.101).</p>			<b>Output for Lead-Acid Batteries:</b>		<b>Output for Li-Ion Batteries (2044 &amp; 2045 only):</b>		12V-version:	max.14.7VDC max.20A	1 cells-version:	max.4.2VDC max.20A	12V-version:	max.14.7VDC max.25A	2 cells-version:	max.8.4VDC max.20A	24V-version:	max.29.4VDC max.10A	3 cells-version:	max.12.6VDC max.20A	36V-version*:	max.44.1VDC max.6.7A	4 cells-version:	max.16.8VDC max.15A	48V-version*:	max.58.8VDC max.5.0A	5 cells-version:	max.21.0VDC max.12A			6 cells-version:	max.25.2VDC max.10A			7 cells-version:	max.29.4VDC max.10A			8 cells-version:	max.33.6VDC max.8.5A			9 cells-version:	max.37.8VDC max.7.5A			10 cells-version:	max.42.0VDC max.7.0A			11 cells-version*:	max.46.2VDC max.6.0A			12 cells-version*:	max.50.4VDC max.5.5A			13 cells-version*:	max.54.6VDC max.5.3A			14 cells-version*:	max.58.8VDC max.5.0A	4 cells-version:	max.14.6VDC max.20A	8 cells-version:	max.29.2VDC max.10A	12 cells-version*:	max.43.8VDC max.6.7A	16 cells-version*:	max.58.4VDC max.5.0A
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The product(s) described above are in conformity with the relevant European Union harmonisation legislation:

2014/35/EU	EU Directive - Safety of electrical equipment ("Low-Voltage Directive") (LVD) recast, repealing Directives 2006/95/EC & 73/23/EEC
2014/30/EU	EU Directive - Electromagnetic Compatibility (EMC) recast, repealing Directives 2004/108/EC & 89/336/EEC
2015/863/EU	EU Directive - Restriction on use of Hazardous Substances in EEE ("RoHS3") recast, repealing Directives 2002/95/EC, 2008/35/EC & 2011/65/EU

The following harmonised standards and technical specifications have been applied:

**Electrical Safety (to LVD- & MDD-Directives)** (International standards and comments are indicated in brackets):

EN 60335-1	EN 60335-1:2012 + /AC:2014 + /A11:2014 Household and similar appliances-General requirements, Edition 5.0 (IEC 60335-1:2010 modified, Edition 5.0)(also IEC 60335-1:2010 modified + /A1:2013 + /A2:2016, Edition 5.2)
EN 60335-2-29	EN 60335-2-29:2004 + /A2:2010 Household and similar appliances-Requirements for battery chargers, Edition 4.2 (IEC 60335-2-29:2002 + /A1:2004 + /A2:2009, Edition 4.2) (also IEC 60335-2-29:2016, Edition 5.0)

**Electromagnetic Compatibility (to EMC- & MDD-Directives)** (International standards and comments are indicated in brackets):

EN 61000-6-1	EN 61000-6-1:2007 Immunity-residential, comm. & light-industrial environment, Edition 2.0 (IEC 61000-6-1:2005, Edition 2.0) (also IEC 61000-6-1:2016, Edition 3.0, not yet an EN-norm)
EN 61000-6-3	EN 61000-6-3:2007 + /A1:2011 & /AC:2012 Emission-residential, comm. & light-industrial environment, Edition 2.1 (IEC 61000-6-3:2006 + /A1:2010)
EN 55014-1	EN 55014-1:2006 + /A1:2009 & /A2:2011 Emission-household appliances, Edition 5.2 (CISPR 14-1:2005 + /A1:2008 & /A2:2011, Edition 5.2) (also CISPR 14-1:2016, Edition 6.0, but not yet an EN-norm)
EN 55014-2	EN 55014-2:1997 + /AC:1997, /A1:2001, /A2:2008 Immunity-household appliances, Edition 1.2 (CISPR 14-2:1997 + /A1:2001 & /A2:2008, Edition 1.2) (also CISPR 14-2:2015, Edition 2.0, but not yet an EN-norm)

# EU Declaration of Conformity



## Additional Information:

Compliance with harmonised standards and technical specifications may have been verified by the manufacturer, by third party testing or by a Certification Body (NCB).

The product(s) may be produced at production sites (for specific product: see "Made in"-marking on the product):

Mascot Electronics AS P.O.Box 177, N-1601 Fredrikstad, NORWAY	Mascot Baltic OÜ Taevakivi 15 EE-13619 Tallinn ESTONIA	Mascot Power Supplies (Ningbo) Co.,Ltd No.128 Jinchuan Road, Zhenhai Ningbo 315221 CHINA
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The production sites are certified to standard EN 29001:2015 (ISO 9001:2015):

Mascot Electronics AS: Kiwa Teknologisk Institutt certificate ref. 044	Mascot Baltic OÜ: Metrosert certificate ref. K-144	Mascot Power Supplies (Ningbo) Co.,Ltd: DNV-GL certificate ref. 179027-2015
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The most recent issue of this Declaration is available at [www.mascot.com](http://www.mascot.com).

Fredrikstad, Norway

Place of issue

2018-10-26

Date of issue

Signed on behalf of Mascot Electronics AS

  
Finn-Erik Wailin, Compliance Manager  
Name, function, signature