

## Model 2541 LA

2,2 A max out • 90-264 VAC input

- 3-step charge control with current detection as charge termination
- Universal input voltage (90-264 VAC)
- 2-pin IEC 320 mains connector
- Waterproof (IP67) version available
- Approvals:
  - Medically certified
    - Safety: EN 60601-1 ed. 3.1
    - Home healthcare EN 60601-1-11
    - EMC: EN 60601-1-2 ed. 4
  - UL approved
- Custom specifications on request:

Charging parameters, connectors, cords, logo print, housing/open frame/IP rating and certificates. For more information: [custom design info sheet](#)



### Available versions

12V / 2,2A

24V / 1,2A

#### Notes:

Desktop unit

Mounting bracket available

Order exchangeable DC plugs and mains cord separately

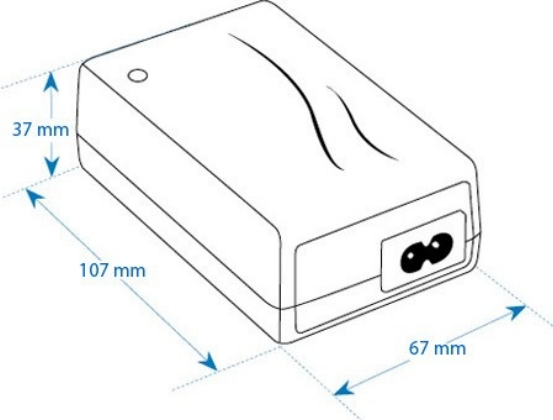
Standard DC output cord (exch. DC plugs):

Female connector L 1.8m, AWG 18, OD: 2.7 X 5.4 Black w. white line, UL 2468

Plug-in version available (2542)

Specifications for MASCOT type 2541	Lead Acid versions				
	6V	12V	24V	36V	48V
Input voltage:	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC
Line frequency:	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz
<b>Charge control:</b>	<b>Charge indication:</b>				
Step 1 Charge current:	2.7A ±0.1A	2.2A ±0.1A	1.2A ±0.1A	0.8A ±0.05A	0.6A ±0.05A
Step 2 Charge voltage:	7.35V ±0.10V	14.7V ±0.15V	29.4V ±0.25V	44.1V ±0.25V	58.8V ±0.25V
- Charge current >:	Orange				
- Charge current <:	Yellow				
Step 3 Charge termination I <:	Green				
Standby voltage:	6.85V ±0.10V	13.7V ±0.15V	27.4V ±0.30V	41.1V ±0.30V	54.8V ±0.40V
Max output power:	20W	32W	35W	35W	35W
Ripple:	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p
Efficiency (at 100% load, 230V) approx.:	78%	84%	87%	87%	87%
Switch frequency approx.:	40kHz				
Leakage current from battery with mains switched off:	<250µA				
Protection:	Protected against reversed polarity and short circuit proof				
Temperature range:	Operating: +25 to +40°C / Storage: +25 to +85°C				
Safety:	EN 62368-1, EN 60601-1, UL 60601-1, EN 60335-2-29				
Insulation class :	Class II				
Insulation voltage: Primary – secondary:	4000VAC / 5700VDC				
EMC standards:	Med. EN 60601-1-2 / Emission EN 61000-6-3 / Immunity EN 61000-6-1				
MTBF at Ta = 30°C and full load: Calculated according to MIL – HDBK – 217F	>250 000 hours				
Mains connection:	2-pins IEC 60320 connector. (Exchangeable mains plugs EU, UK, US, AU available on type 2542).				
Output terminals:	Cord with/without plug. Exchangeable plugs available.				
IP-Grade:	41				
Dimensions:	107 x 67 x 37mm (117 x 75 x 44mm for type 2542)				
Weight:	250g (280g for type 2542)				

Technical drawing



## Charging method B

### STEP 1 - BOOST CHARGE

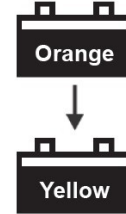
To start a charge cycle, connect the charger to the mains.

The charger is in constant current mode, charging with the maximum current indicated on the charger, the LED-indication on the charger is ORANGE.



### STEP 2 – TOP-UP CHARGE

The charger is in constant voltage mode, charging with a decreasing current until the current is below the charger's charge termination level (indicated on the charger). The LED-indication will turn to YELLOW during Top-up charge. The battery is typically 90-95% fully charged when the LED indicator changes to yellow. The charger stays in this mode until the charge current decreases to charge termination level. The battery is charged to its full capacity at the end of this step.



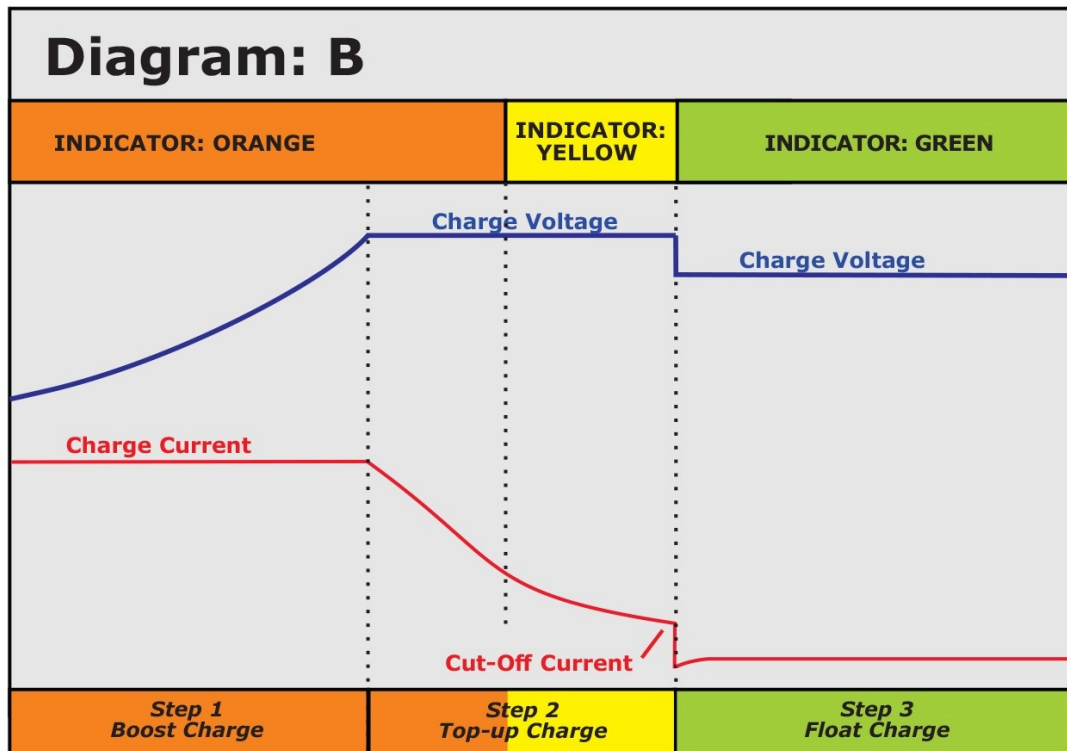
### STEP 3 – FLOAT CHARGE

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 and the charger may remain connected to the battery.

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

A load larger than the cut-off current will initiate a new charge cycle.



# EU & UK 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
<b>declare that this Declaration is issued under our sole responsibility and belongs to the following product(s):</b>			
Product and intended purpose:	Battery Charger for Lead-Acid, Li-Ion or LiFePO <sub>4</sub> Batteries		
Brand(s):	and/or <b>MASCOT</b> (may also carry additional customer name, logo or trade mark)		
Type(s)/Model(s)/UDI-DI:	2541 and 2542 (may also carry additional customer model name or part number)		
Batch / Serial No./UDI-PI:	all CE- and/or UKCA- marked products produced from the date indicated below (for production date: see marking on the product)		
Description:	<b>Input: 0.9A 100-240VAC 50-60 Hz, Class II</b> <b>Output:</b>		

**Charger for Lead Acid Batteries:**

"6 V"	Output:	7.35 V ±10%	max. 2.7 A /20 W
"12 V"	Output:	14.7 VDC ±10 %	max. 2.2 A /33 W
"18 V"	Output:	22.20 V ±10%	max. 1.5 A /34 W
"24 V"	Output:	29.40 V ±10%	max. 1.2 A /36 W
"36 V"	Output:	44.10 V ±10%	max. 0.8 A /36 W
"48 V"	Output:	58.80 V ±10%	max. 0.6 A /35 W

**Charger for Lithium Batteries:**

"1 cell"	Output:	4.20 V ±10%	max. 2.7 A /12 W
"2 cell"	Output:	8.40 V ±10%	max. 2.7 A /23 W
"3 cell"	Output:	12.60 V ±10%	max. 2.3 A /29 W
"4 cell"	Output:	16.80 V ±10%	max. 2.0 A /34 W
"5 cell"	Output:	21.00 V ±10%	max. 1.6 A /34 W
"6 cell"	Output:	25.20 V ±10%	max. 1.4 A /35 W
"7 cell"	Output:	29.40 V ±10%	max. 1.2 A /35 W
"8 cell"	Output:	33.60 V ±10%	max. 1.0 A /35 W
"9 cell"	Output:	37.80 V ±10%	max. 0.9 A /35 W
"10 cell"	Output:	42.00 V ±10%	max. 0.8 A /35 W
"11 cell"	Output:	46.20 V ±10%	max. 0.7 A /33 W
"12 cell"	Output:	50.40 V ±10%	max. 0.7 A /35 W
"13 cell"	Output:	54.60 V ±10%	max. 0.6 A /33 W
"14 cell"	Output:	58.80 V ±10%	max. 0.6 A /35 W

**Charger for Li-FePO<sub>4</sub> Batteries:**

"1 cell"	Output:	3.65 V ±10%	max. 2.7 A /10 W
"2 cell"	Output:	7.30 V ±10%	max. 2.7 A /20 W
"3 cell"	Output:	10.95 V ±10%	max. 2.3 A /26 W
"4 cell"	Output:	14.60 V ±10%	max. 2.0 A /29 W
"5 cell"	Output:	18.25 V ±10%	max. 1.6 A /29 W
"6 cell"	Output:	21.90 V ±10%	max. 1.4 A /31 W
"7 cell"	Output:	25.55 V ±10%	max. 1.2 A /31 W
"8 cell"	Output:	29.20 V ±10%	max. 1.2 A /35 W
"9 cell"	Output:	32.85 V ±10%	max. 1.0 A /33 W
"10 cell"	Output:	36.50 V ±10%	max. 0.9 A /33 W
"11 cell"	Output:	40.15 V ±10%	max. 0.8 A /33 W
"12 cell"	Output:	43.80 V ±10%	max. 0.7 A /31 W
"13 cell"	Output:	47.45 V ±10%	max. 0.7 A /34 W
"14 cell"	Output:	51.10 V ±10%	max. 0.6 A /31 W
"15 cell"	Output:	54.75 V ±10%	max. 0.6 A /33 W
"16 cell"	Output:	58.40 V ±10%	max. 0.6 A /35 W

Charger for Li-Titanate Batteries:			
"1 cell"	Output:	2.85 V ±10%	max. 2.7 A /8 W
"2 cell"	Output:	5.70 V ±10%	max. 2.7 A /16 W
"3 cell"	Output:	8.55 V ±10%	max. 2.7 A /23 W
"4 cell"	Output:	11.40 V ±10%	max. 2.3 A /27 W
"5 cell"	Output:	14.25 V ±10%	max. 2.2 A /33 W
"6 cell"	Output:	17.10 V ±10%	max. 1.9 A /33 W
"7 cell"	Output:	19.95 V ±10%	max. 1.6 A /32 W
"8 cell"	Output:	22.80 V ±10%	max. 1.6 A /34 W
"9 cell"	Output:	25.65 V ±10%	max. 1.2 A /31 W
"10 cell"	Output:	28.50 V ±10%	max. 1.2 A /34 W
"11 cell"	Output:	31.35 V ±10%	max. 1.0 A /32 W
"12 cell"	Output:	34.20 V ±10%	max. 1.0 A /35 W
"13 cell"	Output:	37.05 V ±10%	max. 0.9 A /34 W
"14 cell"	Output:	39.90 V ±10%	max. 0.8 A /32 W
"15 cell"	Output:	42.75 V ±10%	max. 0.8 A /35 W
"16 cell"	Output:	45.60 V ±10%	max. 0.7 A /32 W
"17 cell"	Output:	48.45 V ±10%	max. 0.7 A /34 W
"18 cell"	Output:	51.30 V ±10%	max. 0.6 A /31 W
"19 cell"	Output:	54.15 V ±10%	max. 0.6 A /33 W
"20 cell"	Output:	57.00 V ±10%	max. 0.6 A /35 W

**NOTE:**  
 - Versions with output voltage >42.4 VDC are not within the scope of standard EN 60335-2-29 Ed.4 (ref. Cl.10.101).  
 - The output from versions with output voltage >45 VDC do not comply with standards EN 60601-1 and EN 60950-1 during fault conditions unless the output circuit is installed to be inaccessible to the user.

The product(s) described above are in conformity with the relevant European Union harmonisation legislation for CE-marking:

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
93/42/EEC	EU Directive - General Medical Devices (MDD), Risk Class I Device <i>will from 26.05.2021 be repealed by Medical Device Regulation (MDR), Regulation (EU) 2017/745</i>
2009/125/EC	EU Directive - Energy Related Products, Ecodesign (ERP) recast, repealing Directive 2005/32/EC (EUP)
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 product(s) described above are in conformity with the relevant U.K. legislation for UKCA-marking:

Electrical Equipment (Safety) Regulations 2016

Electromagnetic Compatibility (EMC) Regulations 2016

The Medical Devices (Amendment etc.) (EU Exit) Regulations 2020, Risk Class I Device

Ecodesign for Energy-Related Products (External Power Supplies) Regulations 2020

Draft Regulation, awaiting implementation

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012



The following harmonised standards and technical specifications have been applied:

(International editions and comments indicated in brackets):

### Electrical Safety (to EU LVD-Directive and UK Electrical Equipment Regulations 2016):

EN 60950-1	EN 60950-1:2006 + /A1:2010, + /A11:2009, + /AC:2011, + /A12:2011 + /A2:2013 (IEC 60950-1:2005 modified + /A1:2009 modified + /A2:2013 modified, Edition 2.2)	IT-equipment (ITE), Edition 2.2 <i>(OBS! expired for CE-marking !!)</i>
EN 62368-1	EN 62368-1:2020 (IEC 62368-1:2018)	IT-equipment (ITE), Edition 3.0
EN 60335-1	EN 60335-1:2012 + /AC:2014 + /A11:2014 (IEC 60335-1:2010 modified, Edition 5.0)(also IEC 60335-1:2010 modified + /A1:2013 + /A2:2016, Edition 5.2)	Household and similar appliances-General requirements, Edition 5.0
EN 60335-2-29	EN 60335-2-29:2004 + /A2:2010 (IEC 60335-2-29:2002 + /A1:2004 + /A2:2009, Edition 4.2) (also IEC 60335-2-29:2016, Edition 5.0)	Household and similar appliances-Requirements for battery chargers, Edition 4.2

### Electrical Safety and Electromagnetic Compatibility (to MDR/MDD-Directives):

EN 60601-1	EN 60601-1:2006 + /AC:2010 + /A1:2013 (IEC 60601-1:2005 + /A1:2012)	Medical electrical equipment, Edition 3.1
EN 60601-1-2	EN 60601-1-2:2015 (IEC 60601-1-2:2014, Edition 4.0)	Medical equipment, EMC - Requirements and tests, Edition 4.0

### Electromagnetic Compatibility (to EU EMC-Directive & UK Electromagnetic Compatibility Regulations 2016):

EN 61000-6-1	EN 61000-6-1:2007 (IEC 61000-6-1:2005, Edition 2.0) (also IEC 61000-6-1:2016, Edition 3.0, not yet an EN-norm)	Immunity-residential, comm. & light-industrial environment, Edition 2.0
EN 61000-6-3	EN 61000-6-3:2007 + /A1:2011 & /AC:2012 (IEC 61000-6-3:2007 + /A1:2010)	Emission-residential, comm. & light-industrial environment, Edition 2.1
EN 55014-1	EN 55014-1:2006 + /A1:2009 & /A2:2011 (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)	Emission-household appliances, Edition 5.2
EN 55014-2	EN 55014-2:1997 + /AC:1997, /A1:2001, /A2:2008 (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)	Immunity-household appliances, Edition 1.2
EN 55024	EN 55024:2010 (CISPR 24:2010, Edition 2.0) (also CISPR 24:2010 + /Corr.1:2011 + /A1:2015, Edition 2.1, but not yet an EN-norm)	Immunity-IT-Equipment, Edition 2.0
EN 55032	EN 55032:2012 + /AC:2013 (CISPR 32:2012 + /Corr.1:2012 + /Corr 2:2012, Edition 1.0) (also CISPR 32:2015, Edition 2.0, but not yet an EN-norm)	Emission-Multimedia Equipment, Edition 1.0

### Ecodesign to EU ERP-Directive:

Commission Regulation (EC) No 2019/1782	implementing Directive 2005/32/EC with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies (Repealing Commission Regulation (EC) No 2019/1782 from 2020-04-01) (Note: not applicable to Battery Chargers, ref. Article 1.2 item c)
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### Ecodesign for U.K.:

Draft Regulation only (awaiting implementation)	Draft "Ecodesign for Energy-Related Products (External Power Supplies) Regulations 2020" (Note: not applicable to Battery Chargers)
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### Restriction of the Use of certain Hazardous Substances (RoHS) for EU:

2015/863/EU "RoHS3"	EU Directive - Restriction on use of Hazardous Substances in EEE Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment
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### Restriction of the Use of certain Hazardous Substances for UK:

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
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### 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 products are considered Risk Class I devices according to EU Medical Devices Directive, EU Medical Devices Regulation and the U.K. Medical Devices (Amendment etc.) (EU Exit) Regulations 2020.

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

- Mascot Baltic OÜ, Taevakivi 15, EE-13619 Tallinn, ESTONIA
- Mascot Power Supplies (Ningbo) Co.,Ltd, No.128 Jinchuan Road, Zhenhai, Ningbo 315221, CHINA

The production sites are certified to standard EN 29001:2015 (ISO 9001:2015) by:

- Mascot Baltic OÜ: Metrosert, certificate ref. K-144
- Mascot Power Supplies (Ningbo) Co.,Ltd: DNV-GL, certificate ref. 179027-2015