

## Model 3240 LI

8,5 A max out • 110/230 VAC input

- 3-step charge control with current detection as charge termination
- Switch mode charger
- Charging 1-16 Li-Ion battery cells
- 2-pin IEC 320 input connector
- Waterproof (IP67) version available
- With NTC input on request
- Approvals:
  - Medically certified EN 60601-1 3.1ed
  - 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](#)

### Notes:

Desktop unit

Exchangeable DC plugs (≥5 cells)

Order plugs and mains cord separately



### Available versions

On request

1 cell / 8,5A

2 cells / 7,5A

3 cells / 7A

4 cells / 6A

5 cells / 4,7A

6 cells / 3,9A

7 cells / 3,5A

8 cells / 3A

10 cells / 2,3A

11 cells / 2,2A

12 cells / 2,0A

13 cells / 1,8A

14 cells / 1,7A

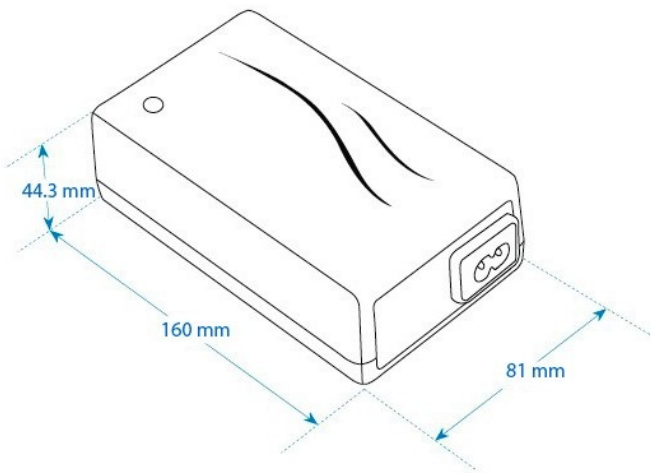
15 cells / 1,6A

16 cells / 1,5A

Specifications for MASCOT type 3240	Li-Ion versions							
	1-cell	2-cell	3-cell	4-cell	5-cell	6-cell	7-cell	8-cell
Input voltage:	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac
Line frequency:	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz
Max output power:	36W	67W	88W	101W	95W	98W	103W	101W
Ripple:	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p
Efficiency (at 100% load, 230V) approx.:	>85%	>87%	>89%	>89%	>89%	>89%	>89%	>89%
Leakage current from battery with mains switched off:	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA
Charge control:	Charge indication:							
Step 1 Charge current:	8.5A +0.1/-0.75A	8.0A +0.3/-0.5A	7.0A +0.3/-0.4A	6.0A +0.1/-0.5A	4.5A +0.3/-0.4A	3.9A +0.2/-0.3A	3.5A +0/-0.4A	3.0A +0.05/-0.3A
Step 2 Charge voltage:	4.2V ±0.05V	8.4V ±0.1V	12.6V ±0.1V	16.8V ±0.1V	21.0V ±0.2V	25.2V ±0.2V	29.4V ±0.2V	33.6V ±0.2V
- Charge current >:	Orange							
- Charge current <:	Yellow							
Step 3 Charge termination (2) <:	Green							
Charge start Vbat <:	4.1V +0.05/-0.15V or mains turn-on	8.2V ±0.1V or mains turn-on	12.3V ±0.1V or mains turn-on	16.4V ±0.1V or mains turn-on	20.5V ±0.2V or mains turn-on	24.6V ±0.2V or mains turn-on	28.7V ±0.2V or mains turn-on	32.8V ±0.2V or mains turn-on
NTC input on request (10K):	0-45°C normal charge <0 or >45°C reduced charge (LED indication is yellow)							
Switch frequency approx.:	65kHz							
Protection:	Protected against reversed polarity and short circuit proof							
Temperature range:	Operating: +25 to +40°C / Storage: +25 to +85°C							
Safety:	EN 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							
Mains connection:	2-pins IEC 60320/C8 connector. (Non-detachable mains cord on request)							
Output terminals:	Battery clips or DC connector.							
IP-Grade:	IP41 (IP67 on request).							
Dimensions:	160 × 81 × 44.3mm							
Weight:	540g (1040g IP67 version)							

Specifications for MASCOT type 3240	Li-Ion versions							
	9-cell	10-cell	11-cell	12-cell	13-cell	14-cell	15-cell	16-cell
Input voltage:	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac	95-130Vac 198-264Vac
Line frequency:	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz
Max output power:	102W	101W	102W	101W	98W	100W	101W	101W
Ripple:	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p	<100mV p-p
Efficiency (at 100% load, 230V) approx.:	>89%	>89%	>89%	>89%	>89%	>89%	>89%	>89%
Leakage current from battery with mains switched off:	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA	<1mA
Charge control:	Charge indication:							
Step 1 Charge current:	2.7A +0/-0.3A	2.4A+0.05/-0.3A	2.2A +0/-0.3A	2.0A +0 /-0.3A	1.8A+0.05/-0.3A	1.7A+0.05/-0.3A	1.6A +0/-0.3A	1.5A +0/-0.3A
Step 2 Charge voltage:	37.8V ±0.2V	42.0V ±0.2V	46.2V ±0.2V	50.4V ±0.3V	54.6V ±0.3V	58.8V ±0.3V	63.0V ±0.3V	67.2V ±0.3V
- Charge current >:	Orange							
- Charge current <:	Yellow							
Step 3 Charge termination (2) <:	Green							
Charge start Vbat <:	36.9V ±0.4V or mains turn-on	41.0V ±0.4V or mains turn-on	45.1V ±0.4V or mains turn-on	49.2V ±0.4V or mains turn-on	53.3V ±0.4V or mains turn-on	57.4V ±0.4V or mains turn-on	61.5V ±0.4V or mains turn-on	65.6V ±0.4V or mains turn-on
NTC input on request (10K):	0-45°C normal charge <0 or >45°C reduced charge (LED indication is yellow)							
Switch frequency approx.:	65kHz							
Protection:	Protected against reversed polarity and short circuit proof							
Temperature range:	Operating: +25 to +40°C / Storage: +25 to +85°C							
Safety:	EN 60601-1, EN 60335-2-29							
Insulation class :	Class II							
Insulation voltage: Primary – secondary:	4000VAC / 5700VDC Med. EN 60601-1-2 /							
EMC standards:	Emission EN 61000-6-3 / Immunity EN 61000-6-1							
Mains connection:	2-pins IEC 60320/C8 connector. (Non-detachable mains cord on request)							
Output terminals:	Battery clips or DC connector.							
IP-Grade:	IP41 (IP67 on request).							
Dimensions:	160 × 81 × 44.3mm							
Weight:	540g (1040g IP67 version)							

## Technical drawing



## Charging method B

### STEP 1 - CONSTANT CURRENT CHARGE

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

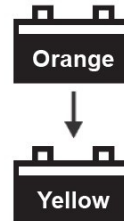
The charger is in constant current mode, charging with the maximum current indicated on the charger, the LED-indication on the charger is ORANGE. This step allows rapid charging of your battery until the battery voltage has increased to a certain set level



### STEP 2 - CONSTANT VOLTAGE CHARGE

When the battery voltage has increased to a certain set level the charger enters constant voltage mode, charging with a decreasing current until the current is below the chargers charge termination level (indicated on the charger). The LED-indication on the charger is ORANGE. When the battery has reached typically 90 - 95% of its full capacity the charge current has dropped below a set level and the LED-indication on the charger changes to YELLOW to indicate that the battery is almost fully charged and may be ready for use.

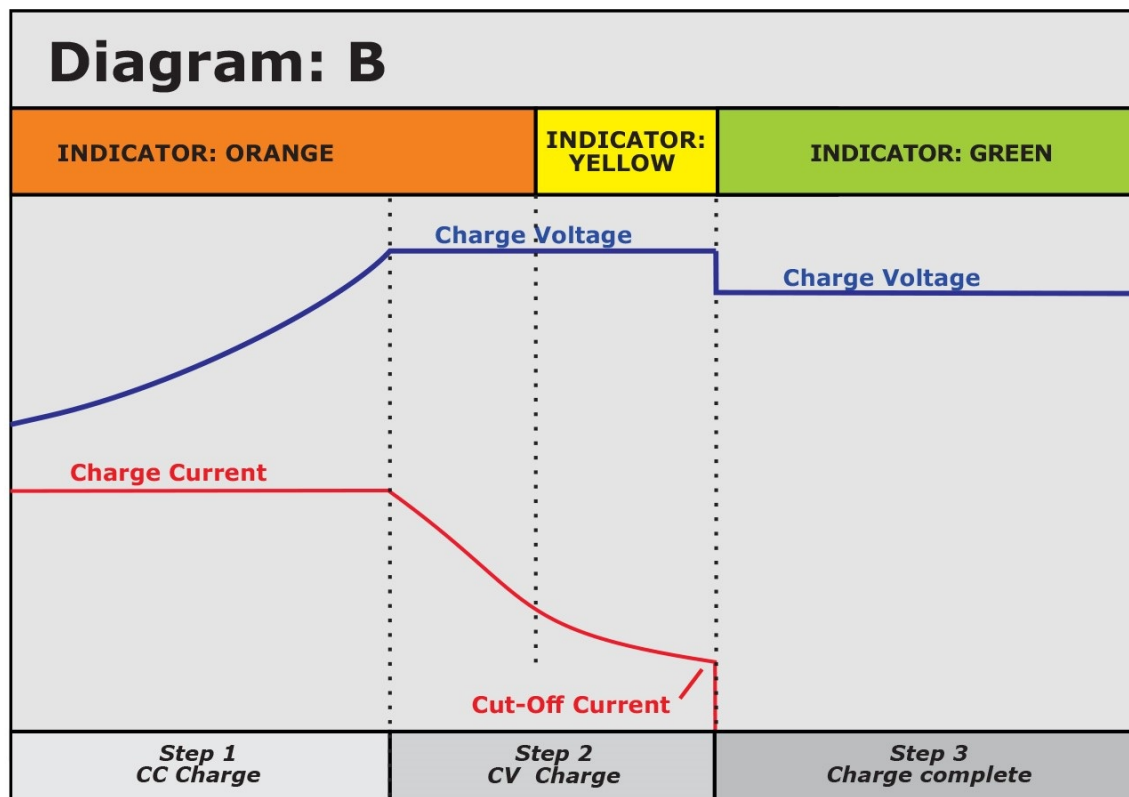
The constant voltage charge continues and the battery reaches its full capacity at the end of this step



### STEP 3 - CHARGE COMPLETE

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

For Li-Ion batteries the charge current is zero and the battery has been charged to its full capacity. After end of charge battery voltage will remain at "Step 2" level even if output voltage of charger is indicated as lower in the diagram. The charger will return to Step 1 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

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

Product and intended purpose:	Battery Charger for Li-Ion-, LiFePO <sub>4</sub> - or Lead-Acid Batteries
Brand(s):	and/or  (may also carry additional customer name, logo or trade mark)
Type(s)/Model(s)/UDI-DI:	3240 (2MOOP protection to IEC 60601-1) 3240P (2MOPP protection to IEC 60601-1) 3240B (PCB only, for building-in, 2MOOP protection to IEC 60601-1) 3240BP (PCB only, for building-in, 2MOPP protection to IEC 60601-1) (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:	Input: max.2.1A 100-120V/220-2340VAC 50-60Hz, Class I or II Output: for Lead-Acid Batteries 6V to 48V (Ucharge = max.2.45V/cell): Charge current 8.5A - 1.7A (max.100W) for Li-Ion Batteries 1 to 16 cell (Ucharge = max.4.2V/cell): Charge current 8.5A - 1.5A (max.100W) for LiFePO <sub>4</sub> Batteries 1 to 16 cell (Ucharge = max.3.65V/cell): Charge current 8.5A - 1.7A (max.100W) NOTE: For compliance with standard EN 60601-1 output terminals >60VDC must be inaccessible to the operator.

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
(EU) 2017/745	EU Regulation - Medical Devices Regulation (MDR), Risk Class I Device amending Directive 2001/83/EC, Regulations (EC) 178/2002 & (EC) 1223/2009 and repealing Directives 90/385/EEC & 93/42/EEC
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 (OBS! expired for CE-marking !!)
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

**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

The most recent issue of this Declaration is available at [www.mascot.com](http://www.mascot.com).

# EU & UK Declaration of Conformity



Signed on behalf of Mascot Electronics AS

**Fredrikstad, Norway**

Place of issue

**2022-11-04**

Date of issue

A handwritten signature in dark ink that reads 'Fredrik Johansen'.

**Fredrik Johansen, Compliance Manager**

Name, function, signature