

Model 4040 LiFe

8 A max out • 90-264 VAC input

- 3-step charge control with current detection and timer
- Universal input voltage 90-264 VAC
- 2-pin IEC 60320 C8, 3-pin C6 on request
- NTC input on request
- Output terminal: Battery clips, DC conn., push-on terminals or open ends
- Temp. compensation of charge voltage
- Wake up and low current start-up of deeply discharged battery packs
- Safety indication and protection: against reverse polarity, short circuit, charging battery packs with the wrong number of cells and safety timer run-out
- Active power factor correction
- Approvals:
 - Medically certified
 - Safety: EN 60601-1 ed. 3.1 and ed. 3.2
 - 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

On request

4 cell / 8A

8 cell / 4A

10 cell / 3,2A

11 cell / 2,9A

12 cell / 2,65A

16 cell / 2A

Notes:

Desktop unit

Wall mount bracket available

With active power factor correction

2MOOP standard, 2MOPP available

Wall mount bracket available

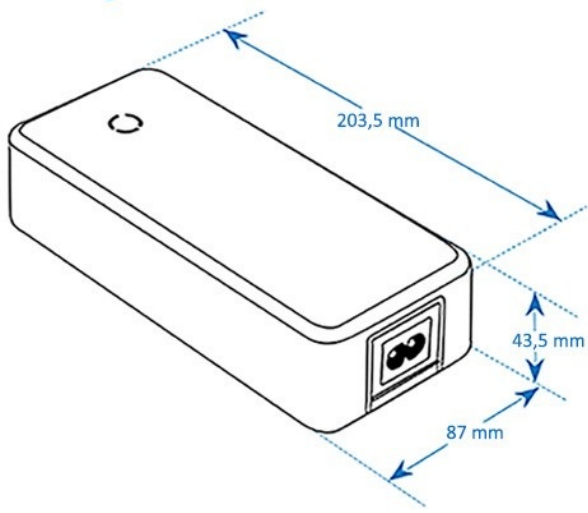
With battery clips and temp sensor

Std output cord: L 1.2m, AWG 14, UL 2464

MASCOT type 4040 LiFePO ₄ chargers:	4-cell LiFePO ₄	8-cell LiFePO ₄	10-cell LiFePO ₄
Input voltage: / Line frequency	90-264Vac 47-63Hz		
Active power factor correction:	Yes		
Max output power	116.8W	116.8W	116.8W
Charge control: Charge indication:			
Step 0 < 10min Yellow	CC 500mA ± 50mA, when batt voltage < 10.5V. 0A / 0V	CC 350mA ± 25mA, when batt voltage < 21V. 0A / 0V	CC 350mA ± 25mA, when batt voltage < 26.2V. 0A / 0V
Step 0 > 10min Red (4 blinks)			
Step 1 (Constant Current) Yellow	CC 8.0A ± 0.2A, when 10.5V < Vbat < 14.6V CV 14.6V ± 0.2V < 5.4A until I charge < 450mA or max. 1h	CC 4.0A ± 0.2A, when 21V < Vbat < 29.2V CV 29.2V ± 0.2V < 2.8A until I charge < 350mA or max. 1h.	CC 3.2A ± 0.2A, when 26V < Vbat < 36.5V CV 36.5V ± 0.2V < 2.2A until I charge < 350mA or max. 1h
Step 2 (Constant Voltage) Flashing Yellow			
Charge timer (step2, CV)	1h	1h	1h
Safety timer (all steps) Red (5 blinks)	72h	72h	72h
Step 3 Float charge voltage Green	14.0V ± 0.2V	28.0V ± 0.2V	35.0V ± 0.2V
Restart voltage	13.2V	26.4V	33.0V
Formation Charge (Step 0)	Low current start-up of deeply discharged battery.		
Wake-up of deeply discharged battery.	Yes, will apply voltage which deactivates deep discharge protection in battery pack.		
Indication when "Battery not connected"	Flashing Green (1s/1s)		
NTC input, on request (std is 10kohm, B-value approx. 4000)	0 – 45 °C: Normal charge. Battery temperature < 0 °C (too cold) or > 45°C (too hot): No charge, wait until temp. is OK.		
Ripple:	< 100mV p-p		
Efficiency (at 100% load) approx.:	91 %		
Switch frequency approx.:	45-75kHz		
Leakage current from battery with mains switched off:	< 1.0 mA at nominal battery voltage (< 0.72 Ah/month)		
Protection:	Protected against reversed polarity. Error Indication: Red (2 blinks) Short circuit proof. Error Indication: Red (3 blinks) Charging of wrong lower voltage battery pack will be limited to 500mA (350mA at 8 and 10cell) and terminated after 10min. Indication: Red (4 blinks) Safety timer. Error Indication: Red (5 blinks) No charge (or charge terminated) if connecting wrong battery pack with higher voltage. Indication: LED is OFF.		
Temperature range:	Operating: -25 to +40°C. Transport and short time storage: -25 to +85°C		
Derating at 40°C approx.:	5.5A	3.1A	2.6A
Safety:	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. AVV and Comm. tech: IEC 62368-1		
Insulation class :	Class II (Class I on request)		
Insulation voltage: Primary – secondary:	4000VAC / 5700VDC		
EMC standards:	EN 55014-1 and -2, Emission EN 61000-6-3, Immunity EN 61000-6-1, EN 60601-1-2.		
Input terminal:	2-pins IEC 320 connector, C8. (3pins IEC 320 connector, C6 on request)		
Output terminals:	DC connector, Battery clips, Push-on terminals or open ends.		
IP-Grade:	41		
Rec. battery capacity:	4-320Ah	2-160Ah	1.6-128Ah
Dimensions:	203.5 × 87 × 43.5 mm		
Weight:	590g		

MASCOT type 4040 LiFePO ₄ chargers:	11-cell LiFePO ₄	12-cell LiFePO ₄	16-cell LiFePO ₄
Input voltage: / Line frequency	90-264Vac 47-63Hz		
Active power factor correction:	Yes		
Max output power	116.4W	116.5W	117.6W
Charge control: Charge indication:			
Step 0 < 10min Yellow	CC 200mA ± 25mA, when batt voltage < 28.6V.	CC 200mA ± 25mA, when batt voltage < 31.2V.	CC 200mA ± 25mA, when batt voltage < 41.6V.
Step 0 > 10min Red (4 blinks)	0A / 0V	0A / 0V	0A / 0V
Step 1 (Constant Current) Yellow	CC 2.9A ± 0.2A, when 28.6V < Vbat < 40.15V CV 40.15V ± 0.3V < 2.0A until I charge < 200mA or max. 1h.	CC 2.65A ± 0.2A, when 31.2V < Vbat < 43.8V CV 43.8V ± 0.3V < 1.8A until I charge < 200mA or max. 1h.	CC 2.0A ± 0.2A, when 41.6V < Vbat < 58.4V CV 58.4V ± 0.3V < 1.4A until I charge < 200mA or max. 1h.
Step 2 (Constant Voltage) Flashing Yellow			
Charge timer (step2, CV)	1h	1h	1h
Safety timer (all steps) Red (5 blinks)	72h	72h	72h
Step 3 Float charge voltage Green	38.5V ± 0.2V	42.0V ± 0.3V	56.0V ± 0.3V
Restart voltage	36.3V	39.6V	52.8V
Formation Charge (Step 0)	Low current start-up of deeply discharged battery.		
Wake-up of deeply discharged battery.	Yes, will apply voltage which deactivates deep discharge protection in battery pack.		
Indication when "Battery not connected"	Flashing Green (1s/1s)		
NTC input, on request (std is 10kohm, B-value approx. 4000)	0 – 45 °C: Normal charge. Battery temperature < 0 °C (too cold) or > 45°C (too hot): No charge, wait until temp. is OK.		
Ripple:	< 100mV p-p		
Efficiency (at 100% load) approx.:	91 %		
Switch frequency approx.:	45-75kHz		
Leakage current from battery with mains switched off:	< 1.0 mA at nominal battery voltage (< 0.72 Ah/month)		
Protection:	Protected against reversed polarity. Error Indication: Red (2 blinks) Short circuit proof. Error Indication: Red (3 blinks) Charging of wrong lower voltage battery pack will be limited to 200mA and terminated after 10min. Indication: Red (4 blinks) Safety timer. Error Indication: Red (5 blinks) No charge (or charge terminated) if connecting wrong battery pack with higher voltage. Indication: LED is OFF.		
Temperature range:	Operating: -25 to +40°C. Transport and short time storage: -25 to +85°C		
Derating at 40°C approx.:	1.7A	1.5A	1.5A
Safety:	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. AVV and Comm. tech: IEC 62368-1		
Insulation class :	Class II (Class I on request)		
Insulation voltage: Primary – secondary:	4000VAC / 5700VDC		
EMC standards:	EN 55014-1 and -2, Emission EN 61000-6-3, Immunity EN 61000-6-1, EN 60601-1-2.		
Input terminal:	2-pins IEC 320 connector, C8. (3pins IEC 320 connector, C6 on request)		
Output terminals:	DC connector, Battery clips, Push-on terminals or open ends.		
IP-Grade:	41		
Rec. battery capacity:	1.45-116Ah	1.32-106Ah	1-80Ah
Dimensions:	203.5 × 87 × 43.5 mm		
Weight:	590g		

Technical drawing



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-, LiFePO₄-, Li-Titanate-, NiMH/NiCd- or Lead-Acid Batteries

Brand(s): and/or **MASCOT** (may also carry additional customer name, logo or trade mark)

Type(s)/Model(s)/	4040	2xMOOP to IEC 60601-1, rated input voltage 100- 240 V, 50- 60 Hz
UDI-DI:	4040V	2xMOOP to IEC 60601-1, rated input voltage 100- 240 V 50 Hz/ 100- 220 V 60 Hz
	4040P	2xMOPP to IEC 60601-1, rated input voltage 100- 240 V, 50- 60 Hz
	4040VP	2xMOPP to IEC 60601-1, rated input voltage 100- 240 V 50 Hz/ 100- 220 V 60 Hz
	4040B	2xMOOP to IEC 60601-1, PWB-only, for building-in, rated input voltage 100 - 240 V, 50 - 60 Hz
	4040VB	2xMOOP to IEC 60601-1, PWB-only, for building-in, rated input voltage 100 - 240 V 50 Hz/ 100 - 220 V 60 Hz
	4040BP	2xMOPP to IEC 60601-1, PWB-only, for building-in, rated input voltage 100 - 240 V, 50 - 60 Hz
	4040VBP	2xMOPP to IEC 60601-1, PWB-only, for building-in, rated input voltage 100 - 240 V 50 Hz/ 100 - 220 V 60 Hz

(all models 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. 1.6 A 100-240 VAC 50-60 Hz, Class I or Class II

Output:

versions for Lead-Acid Batteries 6 - 48 V:

6 V max. 10.0 A	12 V max. 8.0 A	18 V max. 5.3 A	24 V max. 4.0 A	36 V max. 2.66 A
48 V max. 2.0 A				

versions for Li-Ion Batteries 1 - 14 cell:

1 cell max. 10.0 A	2 cell max. 10.0 A	3 cell max. 9.0 A	4 cell max. 7.0 A	5 cell max. 5.6 A
6 cell max. 4.65 A	7 cell max. 4.0 A	8 cell max. 3.5 A	9 cell max. 3.1 A	10 cell max. 2.8 A
11 cell max. 2.54 A	12 cell max. 2.33 A	13 cell max. 2.15 A	14 cell max. 2.0 A	

versions for LiFePO₄ Batteries 1 - 16 cell:

1 cell max. 10.0 A	2 cell max. 10.0 A	3 cell max. 10.0 A	4 cell max. 8.0 A	5 cell max. 6.4 A
6 cell max. 5.3 A	7 cell max. 4.6 A	8 cell max. 4.0 A	9 cell max. 3.5 A	10 cell max. 3.2 A
11 cell max. 2.92 A	12 cell max. 2.68 A	13 cell max. 2.47 A	14 cell max. 2.3 A	15 cell max. 2.15 A
16 cell max. 2.0 A				

versions for Li-Titanate Batteries 1 - 20 cell:

1 cell max. 10.0 A	2 cell max. 10.0 A	3 cell max. 10.0 A	4 cell max. 10.0 A	5 cell max. 8.2 A
6 cell max. 6.8 A	7 cell max. 5.9 A	8 cell max. 5.1 A	9 cell max. 4.5 A	10 cell max. 4.1 A
11 cell max. 3.7 A	12 cell max. 3.4 A	13 cell max. 3.17 A	14 cell max. 2.94 A	15 cell max. 2.75 A
16 cell max. 2.57 A	17 cell max. 2.42 A	18 cell max. 2.29 A	19 cell max. 2.17 A	20 cell max. 2.00

versions for NiMH/NiCd Batteries:

2 cell max. 10.0 A	3-6 cell max. 10.0 A	4-8 cell max. 8.0 A	5-10 cell max. 6.5 A	6-12 cell max. 5.4 A
10-20 cell max. 3.2 A	10-22 cell max. 2.9 A	15-30 cell max. 2.18 A	20-40 cell max. 1.96 A	

NOTES:
 - For compliance with EN 60601-1 output terminals >60 VDC must be inaccessible to operator and may not be interconnected.

EU & UK Declaration of Conformity



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

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 repealing directive 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/or technical specifications have been applied:

(International editions and comments indicated in brackets):

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

EN 60601-1	EN 60601-1:2006 + /AC:2010 + /A1:2013/A2:2021 (IEC 60601-1:2005 + /A1:2012/A2:2020)	Medical electrical equipment, Edition 3.2 (Also tested according to 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
EN 60601-1-11	EN 60601-1-11:2015 (IEC 60601-1-2:2015/A1:2020, Edition 2.1)	Medical equipment, Home Healthcare, Edition 2.0

Electromagnetic Compatibility (to EMC-Directive):

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

Ecodesign to EU ERP-Directive:

Commission Regulation (EC) No 2019/1782	implementing Directive 2009/125/EC with regard to eco-design requirements for no-load condition electric power consumption and average active efficiency of external power supplies (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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Ecodesign for U.S.A. (Note: depends on battery used !):

US Code of Federal Regulations (CFR) Also called "DoE compliance"	10 CFR Part 430 - Energy Conservation Program for Consumer Products, 10 CFR Part 430, Subpart B - Test Procedures, 10 CFR Appendix Y to Subpart B of Part 430, Uniform Test Method for Measuring the Energy Consumption of Battery Chargers or 10 CFR Appendix Z to Subpart B of Part 430, Uniform Test Method for Measuring the Energy Consumption of External Power Supplies, whichever applicable.
California Code of Regulations (CCR) Also called "CEC-400 compliance" referring to CEC-400-2017-002 "2016 Appliance Efficiency Regulations" issued by California Energy Commission	CCR Title 20 - Public Utilities and Energy, Division 2 - State Energy Resources Conservation and Development Commission, Chapter 4 - Energy Conservation, Article 4 - Appliance Efficiency Regulations, Sections 1601 to 1609

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.

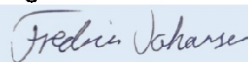
Signed on behalf of Mascot Electronics AS

Fredrikstad, Norway

Place of issue

2023-06-16

Date of issue



Fredrik Johansen, Compliance Manager

Name, function, signature