

## Model 2541 LI

2,7 A max out • 90-264 VAC input

- 3-step charge control with current detection as charge termination
- Universal input voltage (90-264 VAC)
- Charging 1-14 battery cells
- Waterproof (IP67) version available
- Approvals:
  - Medically certified
    - Safety: EN 60601-1 ed. 3.1
    - 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](#)

### Notes:

Desktop unit (Plug-in available, model 2541)  
Exchangeable AC and DC plugs available  
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  
Mounting bracket available  
Order plugs and mains cord separately



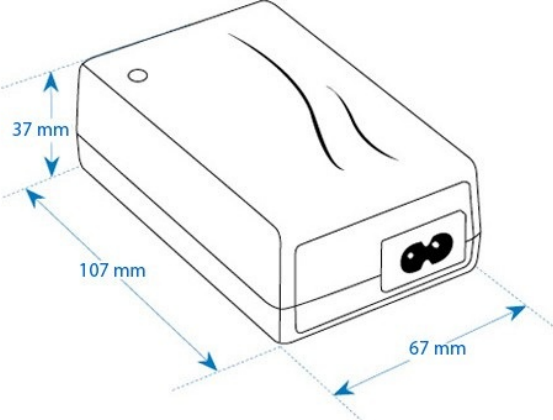
### Available versions

1 cell / 2,7A	2 cells / 2,7A
3 cells / 2,3A	4 cells / 2,0A
5 cells / 1,6A	6 cells / 1,4A
7 cells / 1,2A	8 cells / 1,0A
9 cells / 0,9A	10 cells / 0,8A
11 cells / 0,7A	12 cells / 0,7A
13 cells / 0,6A	14 cells / 0,6A

Specifications for MASCOT type 2541	Li-Ion versions							
	1 Cell	2 Cells	3 Cells	4 Cells	5 Cells	6 Cells	7 Cells	8 Cells
Input voltage:	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC
Line frequency:	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz
Charge control:	Charge indication:							
Step 1 Charge current:	2.7A ±0.1A	2.7A ±0.1A	2.3A ±0.1A	2.0A ±0.1A	1.6A ±0.1A	1.4A ±0.1A	1.2A ±0.1A	1.0A ±0.1A
Step 2 Charge voltage:	4.2V ±0.05V	8.4V ±0.1V	12.6V ±0.1V	16.8V ±0.1V	21.0V ±0.1V	25.2V ±0.1V	29.4V ±0.1V	33.6V ±0.1V
- Charge current >:	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
- Charge current <:	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Step 3 Charge termination I <:	Green	Green	Green	Green	Green	Green	Green	Green
Charge start Vbat <:	4.0V ±0.1V or mains turn-on	8.0V ±0.1V or mains turn-on	12.1V ±0.1V or mains turn-on	16.2V ±0.1V or mains turn-on	20.3V ±0.1V or mains turn-on	24.4V ±0.1V or mains turn-on	28.5V ±0.1V or mains turn-on	32.6V ±0.1V or mains turn-on
Max output power:	11W	23W	29W	34W	34W	35W	35W	34W
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.:	63%	78%	83%	84%	85%	87%	87%	85%
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, EN 60335-2-29							
Insulation class :	Class II							
Insulation voltage: Primary – secondary:	4000VAC / 5656VDC							
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)							

Specifications for MASCOT type 2541	Li-Ion versions					
	9-cell	10-cell	11-cell	12-cell	13-cell	14-cell
Input voltage:	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC	90 - 264VAC
Line frequency:	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz	47 - 63Hz
Charge control:	Charge indication:					
Step 1 Charge current:	0.9A ±0.1A	0.8A ±0.1A	0.7A ±0.1A	0.7A ±0.1A	0.6A ±0.08A	0.6A ±0.08A
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
- Charge current >:	0.35A ±0.1A	0.35A ±0.1A	0.30A ±0.1A	0.30A ±0.1A	0.25A ±0.05A	0.25A ±0.05A
- Charge current <:	Orange	Orange	Yellow	Yellow	Yellow	Yellow
Step 3 Charge termination I <:	100mA	100mA	100mA	100mA	100mA	100mA
Charge start Vbat <:	36.9V ±0.4V or mains turn-on	40.7V ±0.4V or mains turn-on	44.8V ±0.4V or mains turn-on	48.9V ±0.4V or mains turn-on	53.0V ±0.4V or mains turn-on	57.1V ±0.4V or mains turn-on
Max output power:	34W	34W	32W	35W	33W	35W
Ripple:	<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%	85%	85%	85%	85%	85%
Switch frequency approx.:	40kHz					
Leakage current from battery with mains switched off:	<0.5mA					
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, EN 60335-2-29					
Insulation class :	Class II					
Insulation voltage: Primary – secondary:	4000VAC / 5656VDC					
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 - CONSTANT CURRENT CHARGE

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

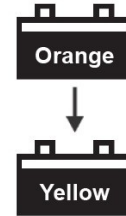
The charger is in constant current mode, charging with the maximum current indicated on the charger, the LED-indication on the charger is ORANGE. This step allows rapid charging of your battery until the battery voltage has increased to a certain set level



### 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.

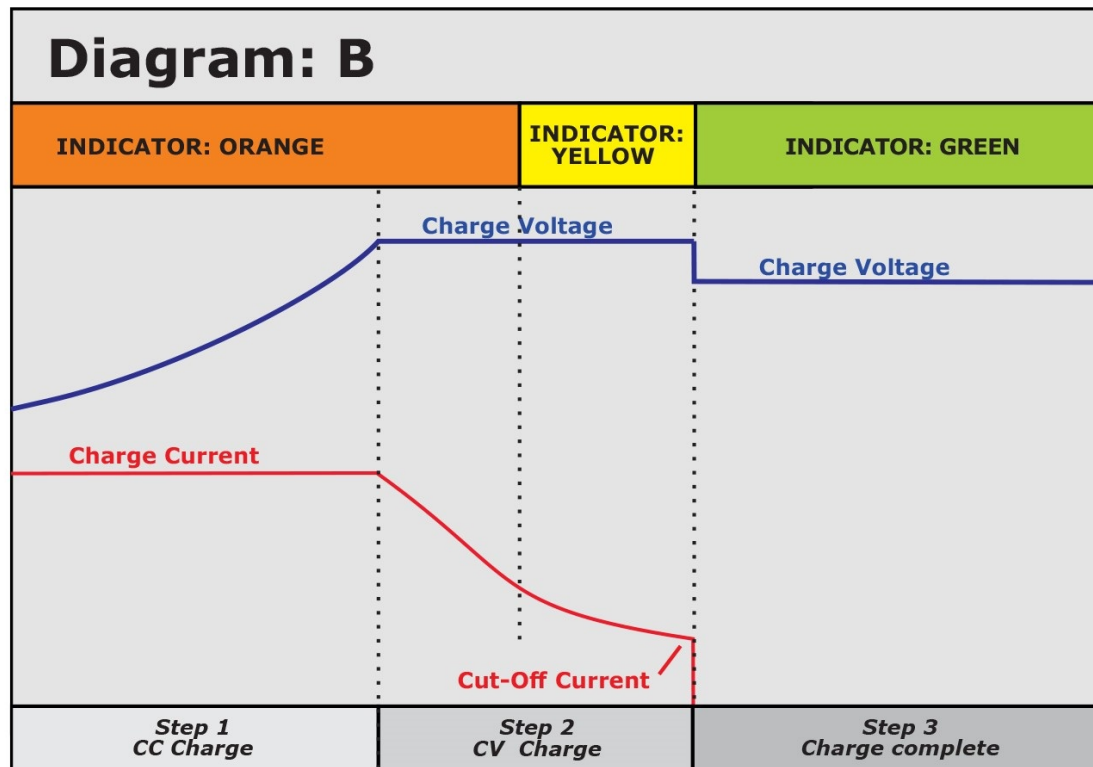
The constant voltage charge continues and the battery reaches its full capacity at the end of this step



### 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
<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



# EU & UK Declaration of Conformity



Type 2541 may be delivered with 2-pins IEC 60320 inlet for detachable mains cord or with non-detachable mains cord) and may also be delivered as protected against ingress of objects and water according to IP67 to standard EN/IEC 60529 (fitted with non-detachable mains cord and filled with PUR compound)

Type 2542 is for Direct Plug-In (when used with exchangeable mains plug-adapters) and for detachable mains cord.

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

Signed on behalf of Mascot Electronics AS

Fredrikstad, Norway

Place of issue

2022-09-19

Date of issue

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

Fredrik Johansen, Compliance Manager

Name, function, signature