

Model 3745 LI

1,5 A max out • 90-264 VAC input

- For charging VARTA Li-Ion EasyPack batteries
- 3-step adaptive charge control
- Charge adapts to battery pack type, which is automatically identified
- Universal input voltage (90-264 VAC)
- Automatic battery temperature monitoring and thermal control to prevent charge of cold/warm batteries
- Wake up and low current start-up of deeply discharged batteries
- Safety indication and protection: against reverse polarity, short circuit, charging battery packs with the wrong number of cells and safety timer run-out
- 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



Available versions

S / 0,45A

L / 0,85A

XL / 1,5A

PLUS / 1,5A

Notes:

Charger for VARTA EasyPack Li-Ion batteries
EasyPack S, EasyPack L, EasyPack XL and EasyPack PLUS

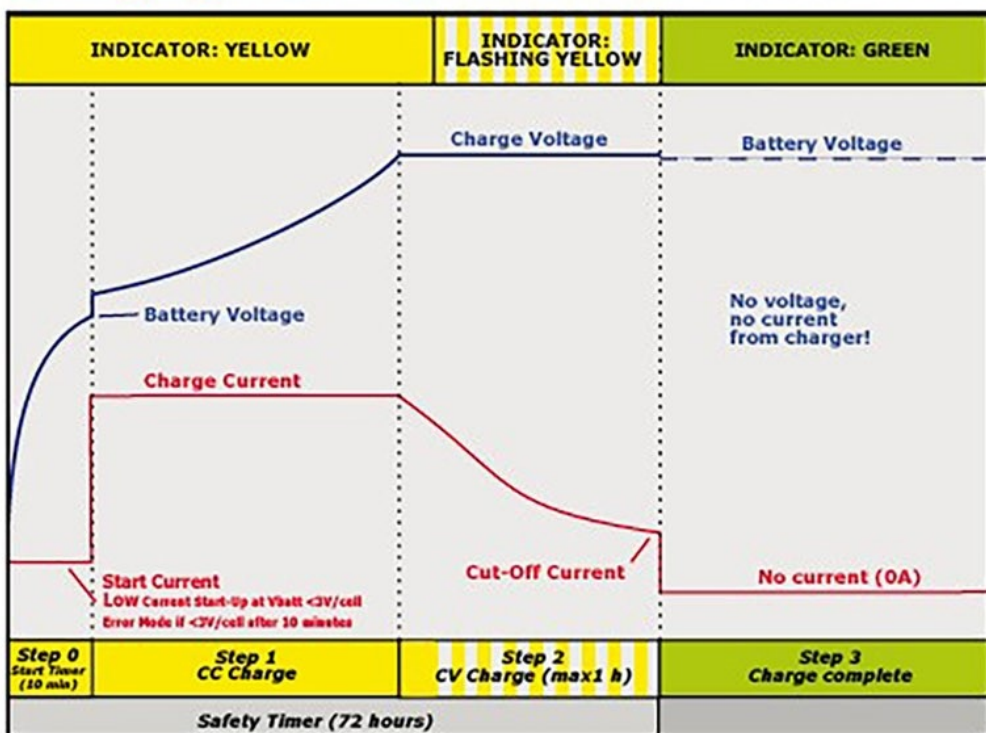
Link to VARTA website-information:

[CELLPAC LITE | VARTA AG \(varta-ag.com\)](https://www.varta-ag.com)

DATE 28.11.22

ID resistor (typical value)	3,9kΩ	10kΩ	24kΩ	52,3kΩ
Battery Pack:	VARTA EasyPack S	VARTA EasyPack L	VARTA EasyPack XL	VARTA EasyPack Plus
Max output power:	1.9W	3.6W	6.3W	6.3W
Efficiency (at 100% load, measured on PCB@230VAC) approx.:	64%	68%	70%	70%
Charge control:	Charge indication:			
Step 0 < 10min	Yellow	CC 40mA ± 10mA, when battery voltage < 3V.	CC 55mA ± 15mA, when battery voltage < 3V.	CC 125mA ± 30mA, when battery voltage < 3V.
Step 0 > 10min	Red (4 blinks)	0A / 0V	0A / 0V	0A / 0V
Step 1 (Constant Current) Yellow	CC 0.45A ± 50mA, when 3V < Vbat < 4.2V.	CC 0.85A ± 0.1A, when 3V < Vbat < 4.2V.	CC 1.5A ± 0.15A, when 3V < Vbat < 4.2V.	CC 1.5A ± 0.15A, when 3V < Vbat < 4.2V.
Step 2 (Constant Voltage) Flashing Yellow	CV 4.2V ± 0.05V, until I charge < 25mA or max. 1h.	CV 4.2V ± 0.05V, until I charge < 55mA or max. 1h.	CV 4.2V ± 0.05V, until I charge < 125mA or max. 1h.	CV 4.2V ± 0.05V, until I charge < 260mA or max. 1h.
Charge timer (step2, CV)	1h	1h	1h	1h
Safety timer (all steps)	Red (5 blinks)	6h	6h	6h
Step 3 (Charge Completed)	Green	0A	0A	0A
Restart voltage	4.1V	4.1V	4.1V	4.1V
Input voltage: / Line frequency	90 - 264VAC / 47 - 63Hz			
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 3435)	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			
Switch frequency approx.:	55kHz			
Leakage current from battery with mains switched off:	< 300 µA at nominal battery voltage (< 0.22 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 25mA 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. Storage: -25 to +85°C			
Safety:	Medical EN 60601-1 / Battery Charger EN 60335-2-29			
Insulation class :	Class II			
Insulation voltage: Primary – secondary:	4000VAC / 5700VDC			
EMC standards:	EN 55014-1 and -2, EN 61000-6-3, EN 61000-6-1, EN 60601-1-2			
Input terminal:	2-pins IEC 320 connector, C8.			
Output terminals:	Battery docking			
IP-Grade:	4X			
Dimensions:	115 × 56 × 35 mm			
Weight:	175g			

Charging characteristics and LED indication



STEP 1 - CONSTANT CURRENT CHARGE

Charge cycle starts automatically when input is connected to mains and battery is connected to the output. The charger is in constant current mode (CC), charging with the maximum current indicated on the charger. The LED-indication on the charger is YELLOW. This step allows rapid charging of your battery until the battery reaches typically 80-95% of its capacity.

Note: If battery voltage is less than 3V/cell, charger will apply low current start up. If normal voltage is not reached during start timer period, charge will terminate and 4 red blinks error will be indicated.

STEP 2 - CONSTANT VOLTAGE (TIMER) CHARGE

The charger is in constant voltage mode (CV).

Charge current is decreasing. The LED-indication on the charger is changed to FLASHING YELLOW shortly after entering this mode. The charger will remain in this mode until the current has decreased to end of charge detection level or until CV timer runs out. The battery is charged to 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. The charge current is zero and the battery has been charged to its full capacity. Charger may remain connected to the battery. A new charge cycle will be initiated if battery voltage decreases with 0.1V/cell.

BATTERY NOT CONNECTED INDICATIONS

Battery not connected is indicated by FLASHING GREEN. In this mode charger will apply short pulses attempting to wake up deeply discharged batteries.

ERROR INDICATIONS

- 2 red blinks: Battery is connected to charger with wrong polarity!
- 3 red blinks: Charger output is shorted. Check output cable connection!
- 4 red blinks: Battery voltage is low. Check battery status or voltage.

- 5 red blinks: Safety timer has run out. Check battery status or capacity.
- LED off: Battery voltage is too high. Check battery voltage.

WAIT MODE INDICATIONS


- Yellow with 1 red blink: Battery temperature is too low ($< 0^{\circ}\text{C}$)
- Yellow with 2 red blink: Battery temperature is too high ($> 45^{\circ}\text{C}$)

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 Charging VARTA EasyPack Li-Ion Batteries
Brand(s):	 and/or MASCOT (may also carry additional customer name, logo or trade mark)
Type(s)/Model(s)/UDI-DI:	3745 (may also carry additional customer model name or part number)
Batch / Serial No./UDI-PI:	all CE-marked products produced from the date indicated below (for production date: see marking on the product)
Description:	Input: max. 0.25 A, 100-240 VAC 50-60 Hz, Class II Output: 4.2 VDC, 0.45 - 1.5 A, max. 6.3 W

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
(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 technical specifications have been applied:

(International editions and comments indicated in brackets)

Electrical Safety (to MDR- & LVD-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
EN 60335-1	EN 60335-1:2012 + /A1:2019 + /A2:2019 (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 5.2
EN 60335-2-29	EN 60335-2-29:2021/A1:2021 (IEC 60335-2-29:2002 + /A1:2004 + /A2:2009, Edition 4.2) (also IEC 60335-2-29:2016+A1:2019, Edition 5.1)	Household and similar appliances-Requirements for battery chargers, Edition 5.1
EN 62368-1	EN 62368-1:2014 + /AC:2015 (IEC 62368-1:2023)	IT and Audio/video equipment, Edition 3.0

EU & UKCA Declaration of Conformity



Electromagnetic Compatibility (to MDR- & EMC-Directives):

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 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 55014-1:2017 (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 6.0
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 55022	EN 55022:2010 + /AC:2011 (CISPR 22:2008 modified, Edition 6.0)(Note: CISPR 22 is now replaced by CISPR 32:2012)	Emission-IT-Equipment, Edition 6.0
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 55032:2015 (CISPR 32:2015, Edition 2.0)	Emission-Multimedia Equipment, Edition 1.0

Ecodesign (to ERP-Directive):

Commission Regulation (EC) No 2019/1782	implementing Directive 2009/125/EC with regard to ecodesign 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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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 the Medical Devices Regulation.

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 responsible manufacturer is certified to standard EN 29001:2015 (ISO 9001:2015):

Kiwa AS, certificate ref. 044

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

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.

Fredrikstad, Norway

Place of issue

2023-06-22

Date of issue

Signed on behalf of Mascot Electronics AS

Fredrik Johansen, Compliance Manager

Name, function, signature