

	1-cell Li-Ion	2-cell Li-Ion	3-cell Li-Ion	4-cell Li-Ion
Available versions		x	x	x
Input voltage: / Line frequency	90-264Vac 47-63Hz			
Max output power	29.4W	67.2W	80W	80W
Step 0 < 10min Yellow	CC 400mA, when battery voltage < 3V	CC 500mA, when batt voltage < 6V	CC 500mA ± 50mA, when battery voltage < 9V	CC 400mA, when batt voltage < 12V
Step 0 > 10min Red (4 blinks)	0A / 0V			
Step 1 (Constant Current) Yellow	CC 8.0A +0.15/-0.3A, when 3V < Vbat < 4.2V	CC 8.0A +0.15/-0.3A, when 6V < Vbat < 8.4V	CC 6.35A +0.15/-0.3A, when 9V < Vbat < 12.6V	CC 4.75A +0.15/-0.3, when 12V < Vbat < 16.8V
Step 2 (Constant Voltage) Flashing Yellow	CV 4.2V ±0.05V < 5.6A until I charge < 400mA or max. 1h	CV 8.4V ±0.1V < 5.6A until I charge < 400mA or max. 1h	CV 12.6V ±0.1V < 4.4A until I charge < 400mA or max. 1h	CV 16.8V ±0.1V < 3.3A until I charge < 400mA or max. 1h
Charge timer (step2, CV)	1h			
Safety timer (all steps) Red (5 blinks)	72h			
Step 3 (Charge Completed) Green	0A			
Restart voltage	4.1V	8.2V	12.3V	16.4V
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			
Switch frequency approx.	65kHz			
Leakage current from battery with mains switched off	< 1 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 terminated after 10min. (see step 0). 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 +40oC. Transport and short time storage: -25 to +85oC			
Safety	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. A/V 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 or mains cable (3pins IEC 320 connector, C6 on request)			
Output terminals	DC connector, Battery clips, Push-on terminals or open ends			
IP-Grade	IP4X (IP44 on request)			
Rec. battery capacity	8-320Ah	8-320Ah	6.35-254Ah	4.75-190Ah
Dimensions	172.5 × 73 × 42 mm			
Weight	400g			
Efficiency (at 230V 100% load) approx.		> 86%	> 90%	> 90%
Derating at 40oC approx.		6.0A	4.6A	3.8A

	5-cell Li-Ion	6-cell Li-Ion	7-cell Li-Ion	8-cell Li-Ion
Available versions	x			
Input voltage: / Line frequency	90-264Vac 47-63Hz			
Max output power	80W			
Step 0 < 10min Yellow	CC 400mA, when battery voltage < 15V.	CC 300mA, when batt voltage < 18V.	CC 300mA, when batt voltage < 21V.	CC 300mA, when batt voltage < 24V.
Step 0 > 10min Red (4 blinks)	0A / 0V			
Step 1 (Constant Current) Yellow	CC 3.8A +0.15/-0.3A, when 15V < Vbat < 21.0V	CC 3.15A +0.15/-0.3A, when 18V < Vbat < 25.2V	CC 2.70A +0.1/-0.3A, when 21V < Vbat < 29.4V	CC 2.35A +0.1/-0.3A, when 24V < Vbat < 33.6V
Step 2 (Constant Voltage) Flashing Yellow	CV 21.0V ± 0.15V < 2.6A until I charge < 300mA or max. 1h.	CV 25.2V ± 0.15V < 2.2A until I charge < 300mA or max. 1h	CV 29.4V ± 0.2V < 1.9A until I charge < 300mA or max. 1h	CV 33.6V ± 0.2V < 1.6A until I charge < 300mA or max. 1h.
Charge timer (step2, CV)	1h			
Safety timer (all steps) Red (5 blinks)	72h			
Step 3 (Charge Completed) Green	0A			
Restart voltage	20.5V	24.6V	28.7V	32.8V
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			
Switch frequency approx.	65kHz			
Leakage current from battery with mains switched off	< 1 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 terminated after 10min. (see step 0). 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 +40oC. Transport and short time storage: -25 to +85oC			
Safety	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. A/V 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 or mains cable (3pins IEC 320 connector, C6 on request)			
Output terminals	DC connector, Battery clips, Push-on terminals or open ends			
IP-Grade	IP4X (IP44 on request)			
Rec. battery capacity	3.8-152Ah	3.15- 126Ah	2.7 - 108Ah	2.35 - 94Ah
Dimensions	172.5 × 73 × 42 mm			
Weight	400g			
Efficiency (at 230V 100% load) approx.	> 91%	> 90%	> 91%	> 91%
Derating at 40oC approx.	2.8A	2.3A	2.2A	1.7A

	9-cell Li-Ion	10-cell Li-Ion	11-cell Li-Ion	12-cell Li-Ion
Available versions	x			
Input voltage: / Line frequency	90-264Vac 47-63Hz			
Max output power	80W			
Step 0 < 10min Yellow	CC 300mA, when batt voltage < 27V.	CC 200mA, when batt voltage < 30V.	CC 200mA, when batt voltage < 33V	CC 200mA, when batt voltage < 36V.
Step 0 > 10min Red (4 blinks)	0A / 0V			
Step 1 (Constant Current) Yellow	CC 2.1A +0.1/-0.3A, when 27V < Vbat < 37.8V	CC 1.9A +0.1/-0.25A, when 30V < Vbat < 42V	CC 1.7A +0.1/-0.25A, when 33V < Vbat < 46.2V	CC 1.5A +0.1/-0.25A, when 36V < Vbat < 50.4V
Step 2 (Constant Voltage) Flashing Yellow	CV 37.8V ± 0.2V < 1.5A until I charge < 200mA or max. 1h	CV 42.0V ± 0.2V < 1.3A until I charge < 200mA or max. 1h	CV 46.2V ± 0.3V < 1.2A until I charge < 200mA or max. 1h.	CV 50.4V ± 0.3V < 1.1A until I charge < 200mA or max. 1h.
Charge timer (step2, CV)	1h			
Safety timer (all steps) Red (5 blinks)	72h			
Step 3 (Charge Completed) Green	0A			
Restart voltage	36.9V	41V	45.1V	49.2V
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			
Switch frequency approx.	65kHz			
Leakage current from battery with mains switched off	< 1 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 terminated after 10min. (see step 0). 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 +40oC. Transport and short time storage: -25 to +85oC			
Safety	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. A/V 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 or mains cable (3pins IEC 320 connector, C6 on request)			
Output terminals	DC connector, Battery clips, Push-on terminals or open ends			
IP-Grade	IP4X (IP44 on request)			
Rec. battery capacity	2.1 - 84Ah	1.9 - 76Ah	1.7 - 68Ah	1.5– 60Ah
Dimensions	172.5 × 73 × 42 mm			
Weight	400g			
Efficiency (at 230V 100% load) approx.	> 91%	> 91%	> 91%	>91%
Derating at 40oC approx.	1.6A	1.5A	1.3A	1.2A

	13-cell Li-Ion	14-cell Li-Ion
Available versions	x	
Input voltage: / Line frequency	90-264Vac 47-63Hz	
Max output power	80W	
Step 0 < 10min Yellow	CC 200mA, when batt voltage < 39V.	CC 200mA, when batt voltage < 42V.
Step 0 > 10min Red (4 blinks)	0A / 0V	
Step 1 (Constant Current) Yellow	CC 1.45A +0.05/-0.2A, when 39V < Vbat < 54.6V	CC 1.35A +0.05/-0.2A, when 42V < Vbat < 58.8V
Step 2 (Constant Voltage) Flashing Yellow	CV 54.6V ± 0.3V < 1.0A until I charge < 200mA or max. 1h.	CV 58.8V ± 0.3V < 0.9A until I charge < 200mA or max. 1h.
Charge timer (step2, CV)	1h	
Safety timer (all steps) Red (5 blinks)	72h	
Step 3 (Charge Completed) Green	0A	
Restart voltage	53.3V	57.4V
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	
Switch frequency approx.	65kHz	
Leakage current from battery with mains switched off	< 1 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 terminated after 10min. (see step 0). 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 +40oC. Transport and short time storage: -25 to +85oC	
Safety	Medical EN 60601-1 / Home Health care EN 60601-1-11/ Battery Charger EN 60335-2-29. A/V 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 or mains cable (3pins IEC 320 connector, C6 on request)	
Output terminals	DC connector, Battery clips, Push-on terminals or open ends	
IP-Grade	IP4X (IP44 on request)	
Rec. battery capacity	1.45 - 58Ah	1.35 – 54Ah
Dimensions	172.5 × 73 × 42 mm	
Weight	400g	
Efficiency (at 230V 100% load) approx.	> 91%	
Derating at 40oC approx.	1.2A	1.1A