

# INDUSTRIAL BATTERIES DC POWER SOLUTIONS

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[www.secukbattery.co.uk](http://www.secukbattery.co.uk)

SEC UK is a Division of Shield Batteries Ltd. We have a wealth of knowledge exceeding 100 years working with all battery chemistries. Our core strength is our Engineering background, with the capability of looking at both the application and design requirements to meet the specification, offering either an "off the shelf" battery solution or where required a new design of a battery pack or battery system. Core to our belief is support and advice for all customers whilst providing safe, reliable battery products for trade and end users.



We supply a range of competitive products including; Industrial Batteries for a wide range of industries, Chargers, Inverters, Test Equipment and Solar products that meet today's highest standards.

We are constantly reviewing and improving our product range to ensure you have the very best products to meet your needs.

Whether it be Lead Acid, Lithium or Nickel based battery types, we can provide a range of batteries that will meet your needs; whatever the application. If you need the complete solution, which includes charger, whether it be a mains Smart charge, Renewable Energy or a combination, we supply Smart Chargers, PV Panels and Charge Controllers; SEC UK can provide a complete solution for you.

If you have a product for any application that you would like technical help on, then please let us know. We would be delighted to assist you with detailed design and drawings to help support any project and offer you a cost-effective solution that meets your needs.

## **CORE INDUSTRIES WE WORK WITH ARE;**

**Aerospace | Rail Networks | Fire & Security | Health & Mobility | Gas & Oil Industry | Renewable Energy | Telecommunications | Sports & Recreation | Transport Networks | Construction | Trailers/Site Facilities**

We pride ourselves on the supply of the correct battery at a competitive price to meet customer requirements from a range of battery types and chemistries. SEC UK's engineering background means that we take both the application and design requirements into account to meet the desired specification and can offer either "off the shelf" solutions or something more bespoke, including assistance with the design of battery packs and battery banks.

***Batteries built to deliver, Batteries built to last***

# HDC - DEEP CYCLE AGM BATTERIES



The SEC UK AGM battery is a premium product in the mainstream VRLA monobloc market. Special alloy plates mean a long float life product with a renowned cyclic ability. Add in great high rate performance and you have a product that consistently outperforms the competition.

**Features:** • Double cycle life when compared to standard AGM batteries and durability for deep-discharge • Modern construction to improve service life • Low self-discharge rate for long shelf life • Absorbed glass matt (AGM) technology assures no free electrolyte • High gas recombination efficiency • High tin calcium alloy • IATA approved for Air Freight • Used in any orientation • Screw down terminals

Type	Alternative Reference	Volts	Ah C100	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Approx. Weight (Kg)	Layout	Terminal
							Length	Width	Total Height			
HDC110-6	6-MRT 130 6-TLA 130	6	--	112	98.3	87.5	193	168	205	16	1	M5
HDC8-12	12-MRT 8	12	9.2	8.6	8	7	151	65	99	2.5	3	ST0
HDC14-12	12-MRT 14	12	15	13.9	13	11.4	151	98	101	4.1	3	ST1
HDC20-12	12-MRT 20	12	20.7	20	18	15.8	182	77	168	6	1	M5
HDC26-12	12-MRT 26	12	29.9	27.8	26	22.8	166	175	125	9.4	1	M6
HDC28-12	12-MRT 28	12	31.2	28	26	23.6	165	125	175	9.3	1	M6
HDC35-12	12-MRT 35	12	38	35.4	33	28.9	195	130	182	11.7	1	M6
HDC45-12	12-MRT 45	12	52	46.8	45	38.7	197	165	170	14.2	1	M6
HDC55-12	12-MRT 60	12	63.3	59	55	48.2	228	138	216	17.7	0	M6
HDC85-12	12-MRT 90	12	92	83.2	80	69	259	168	214	24	0	M6
HDC110-12	12-MRT 110 12-TLA 110	12	115	107.2	100	87.7	326	170	216	31.4	0	M6
HDC130-12	12-MRT 130	12	138	128.6	120	105.2	408	177	225	37.3	0	M8
HDC150-12	12-MRT 150 12-TLA 150	12	172.5	160.8	150	131.6	335	172	278	42.4	0	M8
HDC200-12	12-MRT 200 12-TLA 200	12	230	214.4	200	175.4	522	240	224	62.2	3	M8
HDC260-12	12-MRT 250 12-TLA 250	12	287.5	268	250	219.5	522	268	226	74	3	M8



# HGB-DEEP CYCLE GEL BATTERIES



The SEC UK HGB series of VRLA Pure Gel Batteries feature true 'thixotropic' gelled electrolyte, which improves the cyclic life, protection against deep discharge conditions, ultra low self-discharge and wide temperature range. Combined with the thick lead calcium grids, which gives a robust product with a reputation for rugged reliability. This cost effective and reliable design results in a range, which is perfect for all deep cycle applications including off-grid telecom, renewable energy, mobility, marine and motive power.



- Features:**
- Absolutely maintenance free
  - IATA approved for Air Freight
  - Robust, safe and reliable
  - Low self-discharge
  - Deep discharge
  - Clean and environmentally friendly
  - High cyclic
  - >8 years design life
  - Used in any orientation
  - Deep discharge protection
  - Screw down terminals

Type	Alternative Reference	Volts	Ah C100	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Approx. Weight (Kg)	Layout	Terminal
							Length	Width	Total Height			
HGB35-12	12TLG 40	12	31	30	27.9	24	195	130	167	10.2	1	M6
HGB45-12	12TLG 50	12	41	38	35.3	30.4	197	165	170	13.5	1	M6
HGB55-12	12TLG 60	12	53	50	46.5	40	229	138	211	16.6	0	M6
HGB85-12	12TLG 90	12	75	70	65.1	56	259	168	214	23	1	M6
HGB100-12	12TLG 100	12	89	85	78	68	305	168	213	26.7	1	M6
HGB110-12	12TLG 110	12	103.5	96	90	80	330	173	218	31	1	M6
HGB150-12	12TLG 150	12	139	130	121	104	345	172	280	47.3	1	M8
HGB200-12	12TLG 250	12	213	200	186	160	522	240	224	62.9	3	M8
HGB250-12	12TLG 300	12	256	240	219	192	522	268	226	77.5	3	M8



# STERLING AGM BATTERIES



- Unique construction and sealing techniques, ensures no electrolyte leakage from case or terminals allowing batteries to be positioned on their side.
- Excellent recovery from deep discharge.
- Low self-discharge - approx 3% per month.
- Not restricted for air transport - complies with IATA ICAO special provision A67.
- Maintenance Free, 98% recyclable.



## Sterling HPC Series Range - AGM Deep-Cycle Plus Carbon

**Features:** • Double cycle life when compared to standard AGM batteries • Durability for deep discharge • Advanced Carbon helps increase charge acceptance and optimises fast charging capability \* Dual Terminal (DT) available on request

Type	V	Ah C100	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Total Height	Weight (kgs)	Layout	Terminal
						Length	Width	Height				
HPC200-6	6	215	208	200	172	306	168	222	228	28	4	M8
HPC210-6	6	231	210	192	173	260	180	252	274	27	5	M8/DT *
HPC225-6	6	246	224	210	192	260	180	247	253	30.5	5	M8/DT *
HPC245-6	6	270	245	232	210	243	188	275	275	32.4	5	M8
HPC265-6	6	285	268	255	230	262	180	263	268	32.9	5	M8/DT *
HPC350-6DT	6	385	350	332	305	295	180	346	368	48	5	DT
HPC400-6DT	6	435	400	375	342	295	180	406	428	54.2	5	DT

## Sterling HP Series Range - General Purpose AGM Batteries

**Features:** • Lead calcium grids • High gas recombination efficiency • Multipurpose: Float or light cyclic use

Type	V	Ah C100	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Total Height	Weight (kgs)	Layout	Terminal
						Length	Width	Height				
HP2.3-12	12	---	2.3	2.14	1.93	178	35	60	66	0.96	0	STO
HP2.9-12	12	---	2.9	2.7	2.44	79	56	99	105	1.10	1	STO
HP3.2-12	12	---	3.2	2.98	2.69	134	67	60.5	66.5	1.35	3	STO
HP5-12	12	---	5	4.65	4.2	90	70	101	107	1.75	0	STO
HP7-12	12	---	7	6.53	5.8	151	65	93.5	99	2.18	2	STO
HP7.5-12	12	---	7.5	7	6.25	151	65	93.5	99	2.35	2	STO
HP12-12	12	---	12	11.2	10.2	151	98	95	101	3.5	2	STO
HP18-12	12	---	18	16.7	15.1	181.5	77	167.5	167.5	5.40	1	M5
HP20-12	12	---	20	18.6	17	181.5	77	167.5	167.5	5.78	1	M5
HP26-12	12	---	26	24.2	22.1	181.5	175	125	125	7.8	1	M5
HP35-12	12	---	35	32.6	29.8	195	130	164	178	11.2	0	M6
HP45-12	12	52	46.8	45	38.7	197	165	170	170	14.2	1	M6
HP85-12	12	92	83.2	80	69	259	168	208	214	23.8	0	M6
HP110-12	12	115	104	100	88	330	173	212	220	30.6	0	M8
HP140-12	12	161	140.4	165	116	345	172	274	280	41.2	0	M8
HP200-12	12	230	208	200	172	522	240	218	224	59.8	3	M8
HP260-12	12	288	260	250	215	522	268	220	226	72.5	3	M8

## HPX Series Range - AGM High Rate - Small UPS

**Features:** • Excellent high rate discharge efficiency >40% higher than standard AGM batteries • Lead calcium grids • High gas combination

Type	V	15 Min WPC 1.67VPC	Ah (20hr) 1.8VPC	Dimensions (mm)			Total Height	Weight (kgs)	Layout	Terminal
				Length	Width	Height				
HPX5.4-12	12	20.7	5.4	90	70	101	107	1.77	2	ST1
HPX9-12	12	33.5	9	151	65	93.5	99	2.66	2	ST1

## HPA Series Range - AGM High Rate - UPS - Extended Design Life

**Features:** • Extended design life up to >10 years • Excellent high rate discharge efficiency >40% higher than standard AGM batteries • Special grids for extended life

Type	V	15 Min WPC 1.67VPC	Ah (20hr) 1.8VPC	Dimensions (mm)			Total Height	Weight (kgs)	Layout	Terminal
				Length	Width	Height				
HPA 12-300	12	324.6	82	260	168	208	211	24	0	M6
HPA 12-350	12	370.3	95	306	168	207	210	28	0	M6
HPA 12-400	12	405.7	100	325	170	213	216	31.4	0	M8
HPA 12-540	12	539	155	335	172	275	278	42.4	0	M8

# HFTA/HFTG FRONT TERMINAL BATTERIES



The SEC UK series of HFTA and HFTG VRLA batteries have a compact footprint, excellent power density and a front terminal construction, specifically designed to fit 19" & 23" ETSI racks and cabinets. The battery design features; extra heavy duty plates, high tin, robust busbars and ABS casing, which makes it a high reliability product, suitable for all high integrity standby applications.

## HFTA Front Terminal AGM Batteries

- Features:**
- Front terminal for ease of installation and maintenance
  - Low self-discharge for long shelf life
  - Absorbed Glass Matt (AGM) technology assures no free electrolyte
  - High gas recombination efficiency
  - Extended design life >12 years
  - High tin calcium alloy
  - High cyclic
  - Deep discharge

Type	Alternative Reference	Volts	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Approx. Weight (Kg)	Layout	Terminal
						Length	Width	Total Height			
HFTA55-12	12FTA 55	12	58.4	55	48.4	277	105	222	16.3	3	M6
HFTA80-12	---	12	84.3	80	76.3	564	114	187	26	3	M6
HFTA80-12T	12FTA 80	12	84.8	80	70	395	110	285	27.5	3	M8
HFTA100-12	12FTA 100	12	106	100	88	395	110	285	31	3	M8
HFTA105-12	12FTA 105	12	110.2	105	92	507	109	238	31	3	M8
HFTA125-12	12FTA 125	12	132.6	125	110	550	110	285	39.8	3	M8
HFTA155-12	12FTA 155	12	162.8	155	135	550	110	285	44.5	3	M8
HFTA180-12	12FTA 180	12	180	170	148	550	126	280	54	3	M8

## HFTG Front Terminal GEL Batteries

- Features:**
- Front terminal for ease of installation and maintenance
  - Low self-discharge for long shelf life
  - High tin calcium alloy
  - Deep discharge
  - GEL technology assures no free electrolyte
  - High gas recombination efficiency
  - Extended design life >12 years
  - High tin calcium alloy

Type	Alternative Reference	Volts	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Approx. Weight (Kg)	Layout	Terminal
						Length	Width	Total Height			
HFTG55-12	12FTG 55	12	58	55	47	277	106	222	17.5	3	M6
HFTG80-12	12FTG 80	12	70	65.8	57.8	564	114	187	26.7	3	M6
HFTG100-12	12FTG 100	12	96	90	79.2	394	110	285	35	3	M6
HFTG150-12	12FTG 150	12	144	135	118.8	551	110	288	47.4	3	M6
HFTG180-12	12FTG 175	12	158	150	132	550	126	280	52	3	M6



# HXC - PURE LEAD (TPPL) BATTERIES



The HXC Thin Plate Pure Lead (TPPL) range of Valve Regulated Lead Acid (VRLA) Cells and monoblocs are designed to meet the challenging demands of unreliable grid applications. They benefit from state-of-the-art Thin Plate Pure Lead (TPPL) technology platform. The fast recharge and high reliability makes it the perfect solution for challenging operating conditions in a network of poor grid stability where there is a high risk of uncontrolled partial state of charge (PSoC) operation.

The high cyclability and it's ability to operate in uncontrolled PSoC conditions, where ambient temperature can often be high, provides the operator benefits in terms of low total cost of ownership (TCO). It also has the benefit of resilience against deep discharge. A selection of bespoke racking solutions are available ranging from economic tubular steel designs to premium modular specifications approved for Seismic Zone 4 installations – cell capacity ranging from 92 to 900 Ah.

- Features:**
- Wide Ah range of 2V cells and 12V monoblocs
  - TPPL Technology - high energy density
  - Excellent cyclic performance
  - Exceptional fast charge acceptance ability
  - Deep discharge recovery
  - Long design life
  - Up to 2-year shelf life
  - Low total cost of ownership
  - Flame retardant case and lid
  - Front and top terminal orientations for installation flexibility
  - Resilient to harsh environments

Type	Volts	Ah C10	Ah C8	Dimensions (mm)			Approx. Weight (Kg)	Short Circuit Current	Internal Resistance	Terminals	Maximum Torque Setting
				Length	Width	Total Height					
HXC92F	12	92	91	395	105	264	28	2300	5.5	M8F	5
HXC92F-FT	12	92	91	417	105	256	28	2300	5.5	M6F/ M8M	5
HXC190F-FT	12	190	190	561	125	316	60	3990	3.3	M6M	9
HXC320	2	320	320	103	206	403	20	6320	0.33	M10F	24
HXC400	2	400	400	124	206	403	24	7320	0.28	M10F	24
HXC580	2	580	580	124	206	520	33	7470	0.28	M10F	24
HXC680	2	680	680	145	206	520	38.5	8800	0.24	M10F	24
HXC780	2	780	780	166	206	520	44	9000	0.25	M10F	24
HXC900	2	900	900	145	206	695	50	8110	0.26	M10F	24



# HFP - FLAT PLATE 2-VOLT CELLS



SEC UK HFP 2-volt cells are constructed using AGM (Absorbent Glass Mat) technology, featuring heavy duty lead calcium plates technology, giving Long Float Life performance, excellent cycling ability and a wide temperature working profile. This makes it the market leading range for all large capacity standby installations.

The 2V series is available in a wide range of capacities, with a choice of standard or V0 rated flame retardant tough ABS cases. The cells when used in Float-applications have a design life of >15 years. Cell capacity ranging from 100 to 3000Ah.

Typically used in UPS, DC Power back-up, Marine and Solar applications. The cases are made from polymer plastic ABS material with 2 or 4 terminals, depending on the cell capacity.

A selection of bespoke racking solutions are available ranging from economic tubular steel designs to premium modular specifications approved for Seismic Zone 4 installations.

**Features:**

- Capacity 100 Ah to 3000 Ah at 10 hour rate
- Virgin lead is used to make plates and paste alloy for long life
- Copper alloy terminal insert for low resistance
- Solid ABS jar and covers (UL94V-0 Flame Retardant available)
- Strong gravity casted grids for long life
- Designed for Critical Telecom Application > 15 year design life
- UL recognised, IEC60896-21 Certified, IATA Approved for Air Freight

Type	Volts	Ah C20	Ah C10	Ah C5	Dimensions (mm)			Approx. Weight (Kg)	Terminal
					Length	Width	Total Height		
HFP100-2	2	106.8	100	88.5	170	72	214	5.9	M8
HFP150-2	2	160	150	133	170	98	214	8.4	M8
HFP200-2	2	214	200	177.5	170	110	350	13.7	M8
HFP250-2	2	266	250	222	170	110	350	14.5	M8
HFP300-2	2	320	300	266	170	150	350	18.8	M8
HFP400-2	2	426	400	355	210	175	350	26.4	M8
HFP500-2	2	534	500	443.5	240	175	348	30.5	M8
HFP600-2	2	640	600	532.5	300	175	350	36.6	M8
HFP800-2	2	854	800	710	410	175	350	50.4	M8
HFP1000-2	2	1068	1000	887.5	475	175	350	60	M8
HFP1200-2	2	1280	1200	1065	475	175	350	66.4	M8
HFP1500-2	2	1600	1500	1331	403	354	349	97.8	M8
HFP2000-2	2	2134	2000	1775	490	350	349	121	M8
HFP2500-2	2	2668	2500	2218.5	490	350	349	150.5	M8
HFP3000-2	2	3202	3000	2662	709	350	347	180	M8





# OPzV - TUBULAR PLATE 2-VOLT CELLS



The range of SEC UK OPzV VRLA Tubular Gel single cells can be used in Float or Deep Cyclic services. The cells are based on a traditional design that complies with International DIN standards. The plate construction is engineered with die cast tubular grids and gelled electrolyte technology, reducing the need for topping up or carrying out any maintenance to the cells or battery bank, making the product virtually maintenance free.

The SEC UK OPzV cells uses Gel Tubular positive plate and flat negative plate design, giving >18 years design life in Float-applications at 20°C. This extensive range is perfectly suited for the high integrity critical applications; power generation and distribution, telecom, emergency lighting units. Data processing, marine, gas and oil industry markets and premium renewable energy projects. The construction of the cell casing is made from high quality polymer plastic ABS material or can be offered in V-O cover/case and lid to comply with BS-6290 Part 4, Eurobat IEC 60896 21/22 DIN 40736 Part 3 standards, all the cells are supplied with 2 or 4 terminals. A selection of bespoke racking solutions are available ranging from economic tubular steel designs to premium modular specifications approved for Seismic Zone 4 installations.

**Features:**

- Capacity 200 Ah to 3000 Ah at 8 hour rate
- Virgin lead is used to manufacture plates and paste alloy for long life
- Copper alloy terminal insert for low resistance
- Wider operating Temperature: -4°F to 131°F (-20°C to 55°C)
- Higher cycle life than flat plate cells
- Solid ABS cases and covers (UL94V-0 Flame Retardant available)
- Easy installation vertical or horizontal seismic modular racks
- Designed for critical Telecom Application
- UL recognised IEC60896-21 22 Certified, IATA approved for Air Freight
- 100% initial capacity

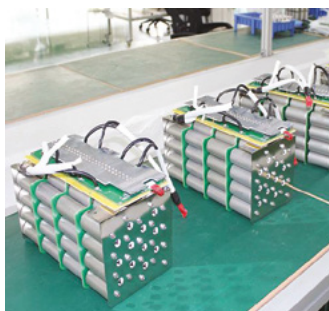
Type	Volts	Capacity Ah	Capacity Watts	Dimensions (mm)			Approx. Weight (Kg)	Terminal
				Length	Width	Total Height		
4 OPzV 200	2	200	400	106	206	390	18	M8
5 OPzV 250	2	250	500	124	206	390	22	M8
6 OPzV 300	2	300	600	145	206	390	26	M8
5 OPzV 350	2	350	700	124	206	506	29	M8
6 OPzV 420	2	420	840	145	206	506	34	M8
7 OPzV 490	2	490	980	166	206	506	39	M8
6 OPzV 600	2	600	1200	145	206	381	46	M8
8 OPzV 800	2	800	1600	191	210	381	64.5	M8
10 OPzV 1000	2	1000	2000	233	210	381	78.5	M8
12 OPzV 1200	2	1200	2400	275	210	381	93	M8
12 OPzV 1500	2	1500	3000	275	210	831	115	M8
16 OPzV 2000	2	2000	4000	399	214	807	155	M8
20 OPzV 2500	2	2500	5000	487	212	807	196	M8
24 OPzV 3000	2	3000	6000	576	212	807	232	M8



# HLi - LITHIUM BATTERIES



Lithium rechargeable batteries have characteristics that offer fast recharging, light weight mono blocs and battery solutions, wide operating temperature range, excellent cycling performance (> 3000 cycles), low internal resistance, give high efficiency and a flat terminal voltage, therefore 100% of the battery's capacity can be accessed. Our Lithium Ion batteries can be fully charged over a wide temperature range, partially charged or up to 100% within 3 hours, using the correct charger or charging system.



## HLiPH LiFePO4 Batteries

SEC UK can design bespoke battery pack solutions or standard mono bloc batteries to suit all specifications, whatever the voltages and capacity requirements are. Applications include off-grid solar and/or wind, leisure market, DC power solutions, engine starting and primary power solutions; where fast recharge time is important.

**Features:** • Longer service life • Superior reliability • Excellent efficiency • 100% capacity is available • High energy density • Partial charge and discharge without damage to the battery • Wide temperature range • Option on terminal types

Type	Volts	Capacity Ah	Capacity Watts	Dimensions (mm)			Approx. Weight (Kg)	Terminal
				Length	Width	Total Height		
HLiPH 12-12	12.8	12	153.6	152	99	96	1.7	ST1
HLiPH 12-20	12.8	20	256	181	77	167	3	M5
HLiPH 12-26	12.8	26	332.8	166	125	125	4.2	M5
HLiPH 12-33	12.8	33	422.4	195	130	180	4.8	M6
HLiPH 12-45	12.8	45	576	197	165	170	7.5	M6
HLiPH 12-55	12.8	55	704	228	138	228	8	M6
HLiPH 12-80	12.8	80	1024	259	168	208	11	M6
HLiPH 12-100	12.8	100	1280	306	173	213	13.6	M8
HLiPH 12-120	12.8	120	1536	330	173	212	14.7	M8
HLiPH 12-150	12.8	150	1920	483	170	238	16.5	M8
HLiPH 12-200	12.8	200	2560	522	240	224	29.6	M8

## Lithium Specials

We have extensive experience in the design and manufacture of bespoke Lithium options and can offer a multitude of Lithium technologies and options ranging from small bespoke battery packs through to Energy storage systems.



# NiCad, NiMh & LITHIUM BATTERY PACKS



Using a variety of cell sizes and battery technology, SEC UK can design, manufacture and supply a range of standard or bespoke battery packs using: NiCad • NiMh • Lithium – Primary • Lithium Ion or Phosphate - Secondary • Alkaline • VRLA – Lead Acid

SEC UK battery packs can be connected in any configuration to form a higher voltage/capacity, to meet the requirement and design configurations of the battery pack.

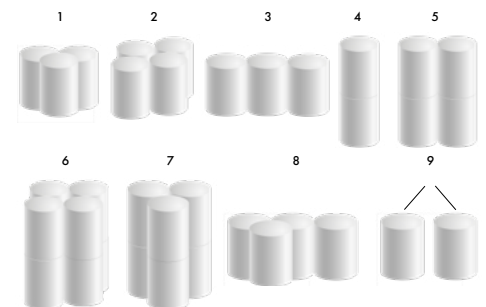
Can Size	Fraction Code	Dimensions (mm)	
		Diameter	Height
<b>AA</b>		<b>14.1</b>	<b>48.0</b>
7/5AA	R	14.1	64.4
4/5AA	S	14.1	42.6
2/3AA	X	14.1	28.0
1/2AA	Z	14.1	24.0
1/3AA	Y	14.1	16.5
<b>AAA</b>		<b>10.1</b>	<b>43.6</b>
7/5AAA	R	10.1	66.5
5/4AAA	V	10.1	49.5
5/6AAA		10.1	41.6
2/3AAA	X	10.1	27.8
1/2AAA	Z	10.1	25.0
1/3AAA	Y	10.1	15.0
1/4AAA	W	10.1	12.0
<b>AAAA</b>		<b>7.9</b>	<b>41.5</b>
<b>F</b>		<b>32.2</b>	<b>89.0</b>
18650		18.0	65.0
18670		18.0	67.0
<b>A</b>		<b>16.8</b>	<b>49.0</b>
7/5A	R	16.8	65.9
4/5A	S	16.8	42.1
1/2A	Z	16.8	28.0
2/5A	T	16.8	21.5
1/3A	Y	16.5	16.5
<b>AF</b>		<b>16.8</b>	<b>49.0</b>
7/5AF	R	16.8	65.9
<b>C</b>		<b>25.3</b>	<b>49.0</b>
2/3C	X	25.3	30.0
1/3C	Y	25.3	19.1
<b>D</b>		<b>32.2</b>	<b>59.0</b>
2/3D	X	32.2	43.0
1/2D	Z	32.2	35.0
1/3D	Y	32.2	29.5
<b>SC</b>		<b>22.1</b>	<b>42.0</b>
5/4SC	V	22.1	49.0

High Temperature NiCad Packs	Nickel Metal Hydride
High Energy - High Capacity	Environmentally friendly, complying with IEC 61951-2
Excellent lifetime expectancy at high temperature	High temperature cells - 70°C to comply with IEC 61951. EN60598-2-22
Temperature range -50°C to 70°C to comply with IEC 61951. EN60598-2-22 & ICEL 1010 E55	High reliability under working conditions
Terminal types: Fly-leads, Solder Tags, Fast-on Connectors or Plugs or fittings to your requirement	Terminal types: Fly-leads, Solder Tags, Fast-on Connectors or Plugs or fittings to your requirement
Battery Pack profile: End Caps, Backing Plates and Heat Shrinkable Sleeving	Battery Pack profile: End Caps, Backing Plates and Heat Shrinkable Sleeving
Design Life: 4 years to comply with IEC 61951. EN60598-2-22 & ICEL 1010 E55	Design Life: 4 years to comply with IEC 61951. EN60598-2-22 & ICEL 1010 E55
Excellent charge profile	Excellent charge profile

## Custom Lithium Battery Pack Manufacturing

We can supply a variety of custom-built Lithium Primary and Secondary battery packs. Our engineers are experienced in Lithium-Ion, Phosphate, Thionyl Chloride and other battery technologies. Offering assistance to help you design the most suitable Lithium battery pack for your application.

Our UK manufacturing team can design and assemble prototypes, small products runs as well as large scale mass production.



## Non-rechargeable Lithium Batteries

Li - (CF) <sub>x</sub>	3.1 Volts	Carbon Monofluoride
Li - MnO <sub>2</sub>	3 Volts	Lithium Manganese Dioxide
Li - SOCl <sub>2</sub>	3.6 Volts	Lithium Thionyl Chloride
Li - SO <sub>2</sub>	3 Volts	Lithium Sulfur Dioxide

# ZINC AIR ALKALINE BATTERIES



Zinc Air Alkaline is the ideal technology for those low power applications where continuous power is required and that works for long periods of time with no maintenance or supervision. The only one that ensures maintenance-free battery durability for at least two years.

**Ready to use** • Works in any position • Can be stacked • No corrosive liquid spillage risk • Battery provides more energy than other Alkaline systems • Lower recycling costs • No gas emissions • All components non-flammable • Complies with numerous standards that guarantee its use in critical applications

## Railway



We offer solutions to help improve signalling systems that control traffic and optimise safety. Zinc Air Alkaline batteries are specifically designed to power these devices for:

- Temporary speed limits
- Signal monitoring
- Train emergency lighting
- Level crossings

## Road Signs



We work with the main manufacturers of road traffic control devices with the aim of providing the sector with specific products to improve road safety throughout the world.

- Mobile warning systems
- Flashing and fixed lighting
- Mobile LED devices

## Parking Meters and Ticket Machines



Zinc Air Alkaline batteries provide these type of devices with the right amount of energy to stay connected and available for each transaction.

Its main advantage is that it needs no maintenance and can operate independently for long period.

## Electric Fencing



The range of Zinc Air Alkaline batteries designed for this sector covers your specific needs, because being the longest lasting on the market they ensure your fences operate correctly without need of continuous supervision.

## Navigation Aid Instruments



The characteristics of the batteries protect the maritime and waterway sector, reliable high-performance, long-lasting power in hard weather conditions for optional operation, such as:

- Lighthouse emergency lighting
- Lighthouse and buoy lighting
- Maritime signalling lamps
- Radio beacons and transmission

## IoT and Telecommunications



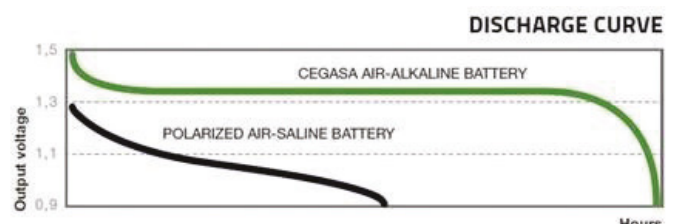
The world is currently evolving towards the next big step in the technology industry enabling the interconnectivity of any device to open up a world of infinite possibilities. We work to ensure that all of these devices are continuously connected and transmitting information.

Zinc Air Alkaline products are designed to provide every IoT application with the right amount of energy for optimum performance.



## Constant Output Voltage = Constant Performance

Our technology ensures that the output voltage varies less than 2%, regardless of the battery's state of charge (SoC). This means that in applications such as signalling, light intensity is constant throughout the life of the battery and, unlike other technologies, does not reduce in intensity as the battery is discharged. Constant output voltage means constant performance for the battery's whole life, which increases its efficiency and reduces the number of batteries needed, minimising the impact on the environment.



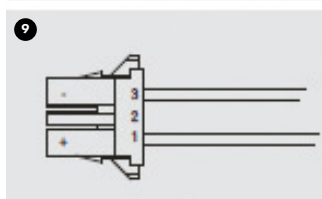
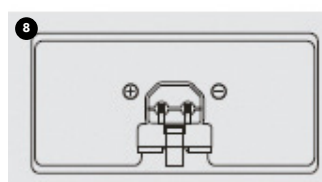
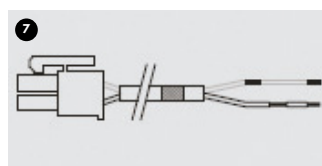
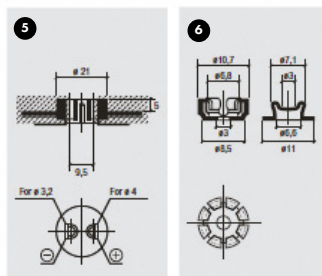
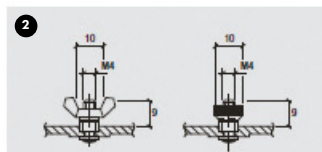
# ZINC AIR ALKALINE BATTERIES



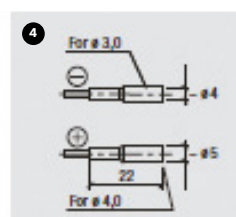
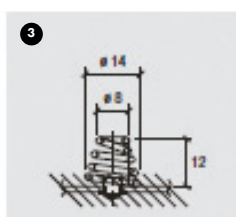
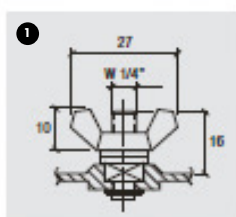
Type	V	Capacity Ah	Capacity Watts	Max. intensity continuous current (mA)	Max. intensity current intermittent (<1') (mA)	Max. intensity pulses (<1') (mA)	Connector	Dimensions	Units/Box	Unit/Pallet
eZ8 1,5/100	1,5	100	130	55	220	440	2	D	4	960
eZ8 1,5/200	1,5	200	260	110	440	880	2	D	4	960
eZ8 1,5/350	1,5	350	455	200	800	1600	2	E	12	288
eZ8 1,5/500	1,5	500	650	500	2000	4000	2	E	12	288
eZ8 1,5/600	1,5	600	780	250	1000	2000	1	F	4	320
eZ8 1,5/700	1,5	700	910	400	1600	3200	2	E	12	288
eZ8 1,5/1200	1,5	1200	1560	500	2000	4000	1	F	4	240
eZ8 1,5/2400	1,5	2400	3120	1000	4000	8000	1	G	2	120
eZ8 1,5/3600	1,5	3600	4680	1500	6000	12000	1	H	1	55
eZ8 1,5/4800	1,5	4800	6240	2000	8000	16000	1	I	1	60
eZ8 3/80	3	80	208	45	180	360	3	J	12	1344
eZ8 3/100	3	100	260	55	220	440	2	D	4	960
eZ8 3/180	3	180	468	90	360	720	7	K	10	600
eZ8 3/350	3	350	910	200	800	1600	2	E	12	288
eZ8 3/600	3	600	1560	250	1000	2000	1	F	4	240
eZ8 3/1200	3	1200	3120	500	2000	4000	1	P	2	120
eZ8 6/25	6	25	130	25	180	360	3	J	12	1344
eZ8 6/40P	6	40	208	45	180	360	6	L	12	720
eZ8 6/50	6	45	234	45	180	360	3	J	12	1344
eZ8 6/60	6	50	260	50	200	400	8	N	5	420
eZ8 6/90	6	90	468	50	200	400	2	N	5	420
eZ8 6/90C	6	90	468	50	200	400	2	C	4	168
eZ8 6/120	6	120	624	50	20	400	1	N	5	420
eZ8 6/140	6	140	728	100	400	800	8	N	5	420
eZ8 6/600	6	600	3120	250	1000	2000	1	G	2	120
eZ8 7,5/50	7,5	45	292,5	45	180	360	4	B	4	360
eZ8 7,5/75C	7,5	65	422,5	50	200	400	2	C	4	168
eZ8 7,5/100C	7,5	90	585	50	200	400	2	C	4	168
eZ8 9/55	9	45	351	50	200	400	47	B	4	360
eZ8 9/75	9	65	507	50	200	400	47	A/B	4	180/360
eZ8 9/100	9	90	702	50	200	400	479	A/B	4	180/360
eZ8 9/130	9	120	936	50	200	400	479	A/B	4	180/360
eZ8 9/150	9	150	1170	50	200	400	479	A/B	4	180/360
eZ8 9/170	9	165	1287	50	200	400	47	A	4	180
eZ8 9/200	9	180	1404	100	400	800	47	A	4	180
eZ8 9/350	9	350	2730	200	800	1600	2	Q	4	160
eZ8 9/600	9	600	4680	250	1000	2000	1	R	1	55
eZ8 12/60	12	60	624	50	200	400	4	B	4	360
eZ8 12/120	12	120	1248	100	400	800	245	O	4	288
oZ8 12/600	12	600	6240	250	1000	2000	1	I	1	60
oZ8 15/100	15	90	1170	100	400	800	245	O	4	288

Type of Box	Dimensions
A	190 x 126 x 160
B	166 x 112 x 114
C	φ 180 x 171
D	φ 64 x 165
E	85 x 85 x 205
F	108 x 108 x 220
G	216 x 108 x 226
H	334 x 116 x 234
I	216 x 216 x 226
J	66 x 66x 110
K	110 x 67 x 125
L	110 x 64, 5 x 197
N	160 x 75 x 130
O	147, 5 x 136 x 122
P	225 x 114 x 235
Q	256 x 85 x 221
R	334 x 114 x 234
S	332 x 332 x 232

## Connectors



## Connectors



A Power Inverter changes direct current (DC) power from a battery, usually 12V or 24V, into conventional mains alternating current (AC) power at 230V (Or 110V). This means that you can use an Inverter to operate all kinds of devices; kitchen appliances, lights, power tools, radios, TV's, computers and much more.

## Pure Sine-Wave Inverters

SEC UK Pure Sine-Wave Inverters provide exceptional output using a more sophisticated design, this is in order to simulate the smooth output of standard mains power. As most electrical products are designed to be powered by mains, pure sine-wave inverters are suitable for 99% of all applications, especially motorised devices where it is proven that pure sine-wave power will lengthen the products lifetime and run much quieter.

PSI Inverters come in many options from 500 watts up to 5000 watts. If you're unsure which Inverter is suitable for your application, get in touch with our technical and sales team for advice.

MODELS	PSI 500	PSI 1000	PSI 1500	PSI 2000	PSI 3000	PSI 4000	PSI 5000
Output Power Watts	500	1000	1500	2000	3000	4000	5000
Output Voltage AC	230 VAC						
Input Voltage DC	12 v (11-15v) / 24 v (21-29v) / 48v (42-58v)						
Frequency HZ	50 Hz / 60 Hz $\pm$ 3Hz						
AV Voltage	AC output regulation: - 10%						
Output Wave-Form	Pure Sine-Wave (>3%) at rated input voltage						
Efficiency	85%						
Low Battery Voltage Alarm Volts	10.5 v $\pm$ 0.5v / 21 $\pm$ 1 v / 42 $\pm$ 2 v						
Low Battery Voltage Shutdown Volts	10 v $\pm$ 0.6c / 20 $\pm$ 1 v / 40 $\pm$ 2 v						
Over Temperature Shutdown	< 65 °C						
Available Protection	Overload protection, input reverse protection, short circuit protection						
Cooling Mode	By Fan - air cooled						
Protection	Battery Low Alarm, Battery Low Shutdown, Battery Polarity Connection						
Remote Switch	Remote Switch with cable						
USB	USB Output socket - 5V 500 mAmps						
Accessory	Cables & Fuses						
Dimension (L x W x H) mm	210 x 150 x 70	310 x 150 x 70	290 x 220 x 90	360 x 220 x 90	360 x 220 x 150	410 x 220 x 150	480 x 220 x 150
Weight (kg)	2.4	3.6	5.8	6.8	10.5	11.5	14.5



Pure Sine-Wave

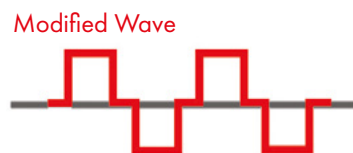
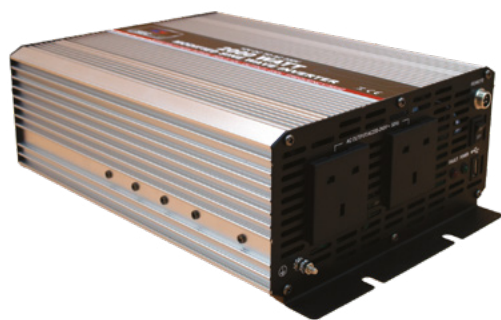


The inverter draws its power from a 12V or 24V battery (preferably deep-cycle), or several batteries wired in parallel. The battery will need to be recharged as the power is drawn out of it by the inverter. The battery can be recharged by running the car or lorry motor or a generator, solar panels or wind turbine. Or you can use a battery charger plugged into an AC outlet to recharge the battery.

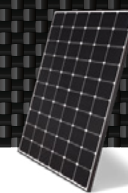
## Modified Wave Inverters

SEC UK Modified Wave inverters are a lower cost alternative to Pure Sine-Wave inverters as they do not require the sophisticated system needed to smooth and render the output waveform. The only down side is that a modified sine-wave introduces harmonic distortion to inductive and any audio equipment. This is generally caused by the harsh 'on and off' phase changing in voltage, however they are still suitable for lights, TV's, microwave ovens and some tools.

MODELS	MSI 500	MSI 1000	MSI 1500	MSI 2000	MSI 3000	MSI 4000	MSI 5000
Output Power Watts	500	1000	1500	2000	3000	4000	5000
Output Voltage AC	230 VAC (110 VAC option available on MSI 2000)						
Input Voltage DC	12 v (11-15v) / 24 v (21-29v) / 48v (42-58v)						
Frequency HZ	50 Hz / 60 Hz $\pm$ 3Hz						
Output Wave-Form	Modified Wave						
Efficiency	85 ~ 90%						
Low Battery Voltage Alarm Volts	10.5 v $\pm$ 0.5v / 21 $\pm$ 1 v / 42 $\pm$ 2 v						
Low Battery Voltage Shutdown Volts	10 v $\pm$ 0.6c / 20 $\pm$ 1 v / 40 $\pm$ 2 v						
Over Temperature Shutdown	< 65 °C						
Available Protection	Overload protection, input reverse protection, short circuit protection						
USB	USB Output socket - 5V 500 mAmps						
Remote Switch	Remote Switch/Mounting plate with cable as standard						
Cooling Mode	By Fan - air cooled						
Replaceable Fuse	30 Amp x 2	30 Amp x 4	30 Amp x 6	30 Amp x 8	25 Amp x 18	30 Amp x 16	30 Amp x 20
Accessory	Included	Alligator clips (excluded)					
Dimension (L x W x H) mm	226 x 108 x 62	275 x 208 x 77	325 x 208 x 77	345 x 230 x 108	420 x 230 x 108	520 x 230 x 108	520 x 230 x 108
Weight (kg)	0.89	2.4	3.2	4.9	6.2	8.6	9



Our ranges of Photovoltaic (PV) Solar Panels are manufactured to the highest quality, using a rigid aluminium frame and a glass front. The rigid PV solar panels are available in Polycrystalline & Monocrystalline options and with the Output Power profile ranging up to 360 Watts.



## SEC UK BlueSolar Monocrystalline Panels

**Features:**

- Low voltage-temperature coefficient enhances high-temperature operation
- Exceptional low-life performance and high sensitivity to light across the entire solar spectrum
- 25-Year limited warranty on power output and performance
- 5-Year limited warranty on material and workmanship
- Sealed, waterproof, multi-functional junction box gives high level of safety
- High performance bypass diodes minimise the power drop caused by shade
- Advanced EVA (Ethylene Vinyl Acetate) encapsulation system with triple-layer back sheet meets the most stringent safety requirements for high-voltage operation
- A sturdy, anodised aluminium frame allows modules to be easily roof-mounted with a variety of standard mounting systems
- Highest quality, high-transmission tempered glass provides enhanced stiffness and impact resistance
- High power models with pre-wired quick-connect system with MC4 (PV-ST01) connectors.

Model	Description	Net Weight	Dimensions (mm)				
			Nominal Power	Max-Power Voltage	Max-Power Voltage	Open-Circuit Voltage	Short-Circuit Current
			Kg	PMPP	VMPP	IMPP	Voc
			W	V	A	V	A
SPM040201200	20W-12V Mono 440 x 350 x 25mm series 4a	1.9	20	18.5	1.09	22.6	1.19
SPM040301200	30W-12V Mono 560 x 350 x 25mm series 4a	2.2	30	18.7	1.61	22.87	1.76
SPM040401200	40W-12V Mono 425 x 668 x 25mm series 4a	3.1	40	18.3	2.19	22.45	2.40
SPM040551200	55W-12V Mono 545 x 668 x 25mm series 4a	4	55	18.8	2.94	22.9	3.22
SPM040901200	90W-12V Mono 780 x 668 x 30mm series 4a	6.1	90	19.6	4.59	24.06	5.03
SPM041151200	115W-12V Mono 1015 x 668 x 30mm series 4a	8	115	19.0	6.04	23.32	6.61
SPM041751200	175W-12V Mono 1485 x 668 x 30mm series 4a	11	175	19.4	9.03	23.7	9.89
SPM042152400	215W-24V Mono 1580 x 808 x 35mm series 4a	15	215	37.4	5.75	45.82	6.30
SPM043052000	305W-20V Mono 1640 x 992 x 35mm series 4a	18	305	32.5	9.38	39.7	10.27
SPM043602400	360W-24V Mono 1956 x 992 x 40mm series 4a	22	360	38.4	9.38	47.4	10.24

MODULE	SPM 040201200	SPM 040301200	SPM 040401200	SPM 040551200	SPM 040901200	SPM 041151200	SPM 041751200	SPM 042152200	SPM 043052000	SPM 043602400
Nominal Power ( $\pm 3\%$ tolerance)	20W	30W	40W	55W	90W	115W	175W	215W	305W	360W
Cell type	Monocrystalline									
Number of cells in series	36						72	60	72	
Maximum systems voltage	1000v									
Temperature Range	-40°C to +85°C									
Surface Maximum Load Capacity	200 kg/m <sup>2</sup>									
Length of Cables / Connector Type	No cable					900 mm MC4				
Frame	Aluminium									
Product warranty	5 years									
Warranty on electrical performance	10 years 90% + 25 years 80% of power output									

STC (Standard Test Conditions): 1000 W/m<sup>2</sup>, 25 °C, AM (Air Mass) 1.5



SEC UK rigid solar panels are widely used for leisure and professional applications involving battery storage systems, using both Pulse Width Modulated (PWM) and a Maximum Power Point Tracking (MPPT) Charge Controller to regulate the PV panel output voltage.



## SEC UK BlueSolar Polycrystalline Panels

**Features:**

- Low voltage-temperature coefficient enhances high-temperature operation
- Exceptional low-life performance and high sensitivity to light across the entire solar spectrum
- 25-Year limited warranty on power output and performance
- 5-Year limited warranty on material and workmanship
- Sealed, waterproof, multi-functional junction box gives high level of safety
- High performance bypass diodes minimise the power drop caused by shade
- Advanced EVA (Ethylene Vinyl Acetate) encapsulation system with triple-layer back sheet meets the most stringent safety requirements for high-voltage operation
- A sturdy, anodised aluminium frame allows modules to be easily roof-mounted with a variety of standard mounting systems
- Highest quality, high-transmission tempered glass provides enhanced stiffness and impact resistance
- High power models with pre-wired quick-connect system with MC4 (PV-ST01) connectors.

Model	Description	Net Weight	Dimensions (mm)				
			Nominal Power	Max-Power Voltage	Max-Power Voltage	Open-Circuit Voltage	Short-Circuit Current
			Kg	PMPP	VMPP	IMPP	Voc
			W	V	A	V	A
SPP040201200	20W-12V Poly 440 x 350 x 25mm series 4a	1.9	20	18.4	1.09	21.96	1.18
SPP040301200	30W-12V Poly 655 x 350 x 25mm series 4a	2.8	30	18.2	1.66	21.80	1.80
SPP040451200	45W-12V Poly 425 x 668 x 25mm series 4a	3.1	45	19.1	2.36	22.90	2.55
SPP040601200	60W-12V Poly 545 x 668 x 25mm series 4a	4	60	19.3	3.12	23.10	3.37
SPP040901200	90W-12V Poly 780 x 668 x 30mm series 4a	6.1	90	19.5	4.61	23.44	4.98
SPP041151200	115W-12V Poly 1015 x 668 x 30mm series 4a	8	115	18.94	6.08	22.73	6.56
SPP041751200	175W-12V Poly 1485 x 668 x 30mm series 4a	12	175	18.3	9.56	21.9	10.24
SPP032602000	260W-20V Poly 1640 x 992 x 40mm series 3a	17	260	30	8.66	36.75	9.30
SPP042702000	270W-20V Poly 1640 x 992 x 35mm series 4a	18.4	270	31.7	8.52	38.04	9.21
SPP043302400	330W-24V Poly 1956 x 992 x 40mm series 4a	22.5	330	37.3	8.86	44.72	9.57

MODULE	SPP 040201200	SPP 040301200	SPP 040451200	SPP 040601200	SPP 040901200	SPP 041151200	SPP 041751200	SPP 032601200	SPP 042702000	SPP 043302400
Nominal Power ( $\pm 3\%$ tolerance)	20W	30W	45W	60W	90W	115W	175W	260W	270W	330W
Cell type	Polycrystalline									
Number of cells in series	36							60	60	72
Maximum systems voltage	1000v									
Temperature Range	-40°C to +85°C									
Surface Maximum Load Capacity	200 kg/m <sup>2</sup>									
Length of Cables / Connector Type	No cable					900 mm MC4				
Frame	Aluminium									
Product warranty	5 years									
Warranty on electrical performance	10 years 90% + 25 years 80% of power output									

STC (Standard Test Conditions): 1000 W/m<sup>2</sup>, 25 °C, AM (Air Mass) 1.5

# MPPT CHARGE CONTROLLERS



MPPT; Max Power Point Tracking is an efficient way of transferring power from the solar array to the energy storage system. As the amount of sunlight varies, the PV panel and battery's characteristics will change. An MPPT will optimise the charging profile from the PV array to the batteries, ensuring maximum power transfer can be achieved, this is called the Maximum Power Point. The MPPT uses this process to find the most efficient charging point for the system. MPPT solves the problem of choosing the best load to solar panel in order to get the most usable power.

- Features:**
- Advanced MPPT technology, with efficiency no less than 99.5%
  - Ultra-fast tracking speed and guaranteed tracking efficiency
  - Advanced MPPT control algorithm to minimize the maximum power point loss rate and loss time
  - Wide MPP operating voltage range
  - High quality components, perfecting system performance, with maximum conversion efficiency of 98%
  - Accurate recognition and tracking of multiple-peaks maximum power point
  - International famous brands of ST and IR's components of high quality and low failure rate are used, which can ensure the product's service life
  - Charging power and current limitation function
  - Compatible with lead-acid and lithium-ion batteries
  - Battery temperature compensation function
  - Real-time energy statistics function
  - Overheating power reduction function
  - Multiple load work modes
  - The communication port adopts professional protection chip, which can provide 5VDC power supply, and has over-current and short-circuit protection
  - With RS-485 communication bus interface and Modbus communication protocol, it is available to meet various communication requirements in different situations



Model	1210AN	2210AN	3210AN	4210AN
System nominal voltage	12/24 VDC Auto Select			
Rated charge current	10A	20A	30A	40A
Rated discharge current	10A	20A	30A	40A
Battery voltage range	8~32V			
Max. PV open circuit voltage	100V/92V			
MPP voltage range	(Battery voltage + 2V) ~72V			
Max. PV input power	130W (12V) 260W (24V)	260W (12V) 520W (24V)	390W (12V) 780W (24V)	520W (12V) 1040W (24V)
Self-consumption	≤12mA			
Discharge circuit voltage drop	<0.23V			
Temperature compensate co-efficient	-3mV/°C/2V (Default)			
Grounding	Common Negative			
RS485 interface	5VDC/100mA			
LCD backlight time	60S (Default)			
Working environment temperature	-25°C ~ +50°C (100% input and output)			
Storage temperature range	-20°C ~ +70°C			
Relative Humidity	<95% (N.C)			
Enclosure	IP30			
Dimension	172x139x44mm	220x154x52mm	228x164x55mm	252x180x63mm
Mounting dimension	130x130mm	170x145mm	170x164mm	210x171mm
Mounting hole size	φ5mm			
Terminal	12AWG(4mm <sup>2</sup> )	6AWG(16mm <sup>2</sup> )	6AWG(16 mm <sup>2</sup> )	6AWG(16 mm <sup>2</sup> )
Recommended cable	12AWG(4 mm <sup>2</sup> )	10AWG(6 mm <sup>2</sup> )	8AWG(10 mm <sup>2</sup> )	6AWG(16 mm <sup>2</sup> )
Weight	0.57kg	0.94kg	1.26kg	1.65kg

# PWM CHARGE CONTROLLERS



SEC UK offer a range of charge controllers (battery regulators) designed to limit the charge voltage and current to the energy storage systems or batteries. A PWM Charge Controller is an efficient solar charge controller that adopts the most advanced digital techniques. The multiple load control modes enable it to be widely used on solar home systems, traffic signals, solar street lights and solar garden lamps.

Pulse-width modulation PWM, or pulse-duration modulation, is a technique used to encode a message into a pulsing signal. The main advantage of PWM is that power required by the unit (the power load) is very low. When switched off there is practically no current being drawn, when it is switched on and power is being transferred from the PV array, there is almost no voltage drop across the PWM device.

PWM regulates the input voltage to the battery by using pulse width modulation to drop the output voltage of the PV Panel to a working 13.8 volts.

- Features:**
- Adopt high quality components of ST, IR and Infineon ensuring product lifespan
  - Terminals have UL and VDE Certification, the product is safer and reliable
  - 100% input and output in the environment temperature range
  - 3-stage intelligent PWM charging: Bulk, Boost/ Equalize and Float
  - Supports 3 charging options: Sealed, Gel, Flooded and User
  - RS485 communication interface and Modbus communication protocol
  - Battery temperature compensation function
  - Energy statistics function
  - Multiple load control modes
  - Extensive Electronic protection



Model	LS1024B	LS2024B	LS3024B
System nominal voltage	12/24 VDC Auto Select		
Battery Types	Sealed/Gel/Flooded/User		
Rated charge current	10A	20A	30A
Rated discharge current	10A	20A	30A
Working Voltage range of controller	8~32V		
Max. PV open circuit voltage	50V		
Self-consumption	≤8.4mA/12V; ≤7.8mA/24V		
Charge circuit voltage drop	<0.28V		
Discharge circuit voltage drop	<0.20V		
Temperature compensate coefficient	-3mV/°C/2V (default)		
Working environmental temperature	-35°C ~ +50°C		
Relative humidity	≤95% (N.C.)		
Enclosure	IP30		
Grounding	Common Positive		
Dimension	138.6x69.3x37mm	159.6x81.4x47.8mm	200.6x101.3x57mm
Terminal	0.13kg	0.3kg	0.5kg

Correct battery charging is as important as selecting the correct battery. Protecting and properly maintaining your battery begins with selection the right battery charger. There are many different factors to consider when selecting a battery charger however charging batteries incorrectly is the most common cause for premature battery failure.

## High Frequency Charging



SEC UK supply High Frequency (HF) chargers in single and three phase. Our range for Motive Power equipment are manufactured in Europe using the latest technology and software. Our HF chargers are fully programmable, and compatible with all battery technology types, therefore delivering the correct voltage and current to maximise your battery's performance and life. Solutions from 6V - 96V.

## Lithium Battery Charging



With Lithium technology batteries becoming more popular in different markets, SEC UK can offer a range of lithium chargers to suit your requirements. Lithium batteries are able to be charged more quickly and thanks to fast-charge and opportunity charging, you can charge your battery without having to change it. Our Lithium batteries have an additional connector to simplify the charging operation, so there is often no need to disconnect the battery from your machine during the charge process.

## Multi Bank Chargers



The SEC UK range of chargers are designed for customers that need to charge more than one battery at a time. Many variants are available with outputs from 12V – 36V and suitable for all battery technologies including Sealed Lead Acid, Gel, Wet, AGM and Lithium battery chemistries.

## Charging Solutions for all Applications



Choosing the right battery charger is as important as selecting the right battery. We can offer complete charging solutions for all applications, whether it's a maintenance charger or industrial charger for airport equipment, we can supply the right charging solution.



# BATTERY TESTERS

## SM69C - Constant Current Capacity Tester



### Features:

- 12v Lead Acid and 12-16v Lithium batteries
- Takes the guess work out of battery testing
- Friendly, easy to use, accurate results
- Printed test reports
- Easily updated to cover new batteries

## S3554 - Impedance Tester



### Features:

- 2, 4, 6 and 12 volts (nominal) batteries
- Up to 60 volt test range
- Designed for UPS, central lighting systems and other large backup battery installations
- Auto-hold and Auto-data storage functions
- Integral storage for up to 4800 sets of data
- Complete diagnosis of VRLA
- Supporting software included
- Supplied with heavy-duty carry case

We are proud of our Accreditations, our Health & Safety record and Quality Management systems. The Environment is our primary focus and our processes and systems are robust and closely monitored.

## ISO Certification



We are accredited and audited to ISO9001:2015. Our QMS is audited annually by QAS International.



In addition to accreditation to ISO9001:2015, we are also accredited for its Environmental Systems and audited to ISO14001:2015. External audits are carried out annually by QAS International.



Further, our Health & Safety Systems are accredited and audited to ISO45001:2018. External audits are carried out annually by QAS International.

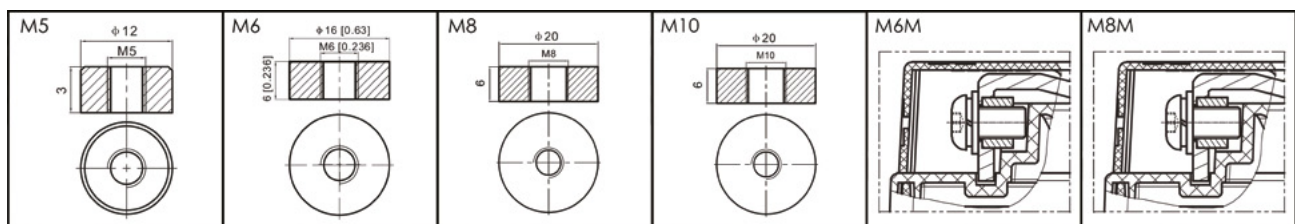


We are a Verified Supplier on RISQS.

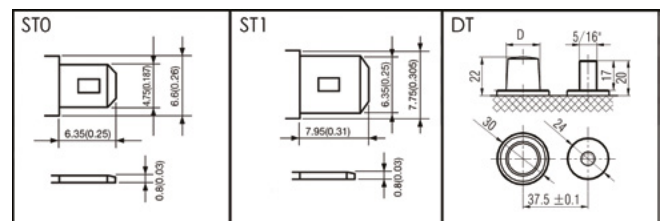


As a battery manufacturer and distributor we are registered with the Environmental Agency under the Waste (England & Wales) Regulations 2011.

## TERMINALS & TORQUE SETTINGS



TERMINAL TYPE	TORQUE SPECS Nm MAX
M5	3 Nm
M6	5 Nm
M8	12 Nm
M10	24 Nm



- We are dedicated to caring for the environment and believe that scrap batteries should be recycled and disposed of responsibly.
- We offer a comprehensive easy-to-use scrap collection service provided by our recycling partner Ecobat Logistics.

## Why recycle?

98% of a lead acid battery can be reclaimed through recycling. The lead, plastic and acid components are re-processed and manufactured into an array of other products including guide posts, cabling and detergents.

1. **Sulphuric acid** - Sulphuric acid is converted to sodium sulphate to be used in the manufacture of glass, textiles, laundry detergents and fertilisers.
2. **Lead** - Battery plates, intercell connections and posts made from lead are melted down in a smelter furnace. The molten lead is then formed into ingots for re-use.
3. **Polypropylene** - Battery containers and lids are chipped and sent for recycling into rubbish bins, plant pots etc.

## Benefits of recycling

Help build a cleaner world for future generations, prevent harm to humans and wildlife, protect the environment, conserve natural resources, reduce the amount of waste going to landfill.



companies to handle disposal competently. Every stage of the process needs to be recorded and companies that fail to do so face prosecution with the prospect of large fines and even imprisonment.

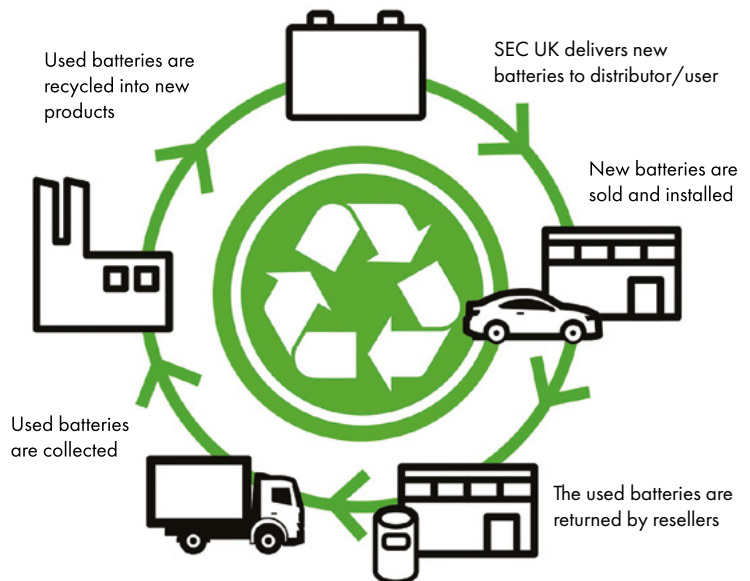
## The SEC UK scrap collection service provides:

- UN approved, sealed containers for safe storage
- Regular collections
- Full sorting, processing and recycling of all scrap batteries regardless of manufacturer
- Legally compliant documentation for the business
- Quick payment of the scrap value of the batteries collected

## Battery types collected

We can collect and recycle any kind of waste battery chemistry, from small button cells used in watches to large industrial batteries used in fork lift trucks. We are also able to handle spent lithium-ion batteries which must be stored separately to lead acid types due to the extra fire risk if not handled responsibly. **There may be an additional cost for disposal of Non-Lead Acid chemistries.**

## Our recycling process



## Profit opportunities

Our service provides businesses with additional revenue from the collection and recycling of waste batteries.

By encouraging your customers to return their waste batteries to you and then disposing of them via our service, your business can receive additional revenue whilst also being legally and environmentally compliant.

## Legal compliance

Our legally compliant solution meets the requirements of all environmental regulations surrounding collection, processing and recycling. It also provides full hazardous waste disposal documentation for your business.

The disposal of waste batteries is regulated by strict European legislation, so it is a legal requirement for companies to handle disposal competently. Every stage of the process needs to be recorded and companies that fail to do so face prosecution with the prospect of large fines and even imprisonment.

To discuss your waste battery requirements call us on 01283 215040 Email: [secuk@shieldbatteries.co.uk](mailto:secuk@shieldbatteries.co.uk)

- Always use the correct voltage and current profile when charging
- Do not try to open up the battery's vent or dismantle the battery
- Always follow manufacturers guidelines.
- Do not leave in a discharged state, or short-circuit the battery terminals



## Battery acid

Battery Acid can cause burns. Suitable hand, eye and face protection and protective clothing must be worn.



## If electrolyte is swallowed

Do NOT induce vomiting - give a glass of water. Seek immediate medical assistance.



## First aid

If in eyes, hold eyelids apart and flush the eye continuously with running water. Seek medical assistance and continue flushing until advised to stop by a medical professional, or after at least 15 minutes have passed.

If skin or hair contact occurs, remove contaminated clothing and flush skin or hair with running water.



## Exploding battery

Batteries generate explosive gases during vehicle operation and when charged separately. Flames, sparks, burning cigarettes or other ignition sources must be kept away at all times. Exercise caution when working with metallic tools or conductors to prevent short circuits and sparks.



## Acid spill response

Neutralise spills with soda ash or other suitable alkali. Dispose of residue as chemical waste or as per local requirements.



## Always shield eyes when working near batteries

When charging batteries, work in a well ventilated area - never in a closed room. Always turn battery charger or ignition off before disconnecting a battery.

## Common battery symbols



Shield eyes - Eye protection must be worn



Note operating instructions



No smoking - No naked flames - no sparks



Keep away from children



Explosive gas - may be released



Battery acid is corrosive



Never dispose of as domestic waste - take to a designated waste reclamation site



Battery is recyclable - follow local recycling and reclaiming procedures.

## SEC UK Batteries

Telephone: 01283 215040 Email: [secuk@shieldbatteries.co.uk](mailto:secuk@shieldbatteries.co.uk)

SEC UK is a division of Shield Batteries



[www.secukbattery.co.uk](http://www.secukbattery.co.uk)

*powering the future since 1910...*

