

Reserve Power RES OPzS Batteries

Cyclic Applications



SOLAR PV



GENSET



WIND

 **SUNLIGHT**
Reliable Battery Solutions

Reserve Power

As a member of a strong and developing business ecosystem, SUNLIGHT relies on its modern infrastructure, continuous innovation and its passion for excellence, to develop and supply reliable battery solutions.

At the core of the company's growth lies its state-of-the-art manufacturing plant in Northern Greece, covering an area of 142.000 m². The company has consistently invested in developing one of the most advanced industrial plants in Europe, running highly specialized production and assembly lines. The plant is fully compliant with the strictest international standards and is certified for Quality, Occupational Health & Safety and Environmental management systems.

The products are developed by SUNLIGHT's R&D team which constantly designs and evaluates new innovative solutions to better meet market needs based on the latest technological trends, industry developments and market feedback.

SUNLIGHT's products and services have gained international recognition by ensuring uninterrupted and reliable operations in a wide range of critical applications for a broad spectrum of industries, such as Telecom and Power networks.

The complete Reserve Power portfolio consists of:

OPzS OPzV	RES OPzS RES OPzV	RES SOPzS RES SOPzV	RES SLT RES SLT GEL	SP Series Accuforce SVT/ SVT Gel Front Access	OGI
--------------	----------------------	------------------------	------------------------	--	-----

Vented Tubular Plate Batteries for Renewable Energy Applications

RES OPzS is a **premium battery range**, developed for applications **requiring regular deep cycling**.

It is a **low maintenance** energy storage solution that offers significant benefits in terms of **cost per cycle**, combined with the highest level of **reliability** and **performance** even for remote installations where long discharges occur and excellent recharging properties are essential.

Optimum design, exclusive use of high quality materials, robust construction and state-of-the-art manufacturing processes make RES OPzS batteries the **ideal solution for demanding Renewable Energy Storage applications**.



Indicative Battery-Based Power Supply Systems

Telecom Networks

Autonomous remote communication hubs such as cellular base stations, repeaters and VSATs.

Smart-Grids

Demand-driven selection of power source providing higher efficiency.

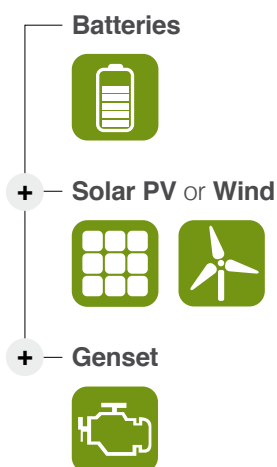
Residential Installations

Off-grid or smart grid connected power systems electrifying homes, hotels, hospitals and schools.

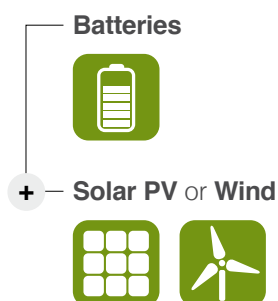
Traffic Systems

Signalling and lighting to roads, railways, airports and marines.

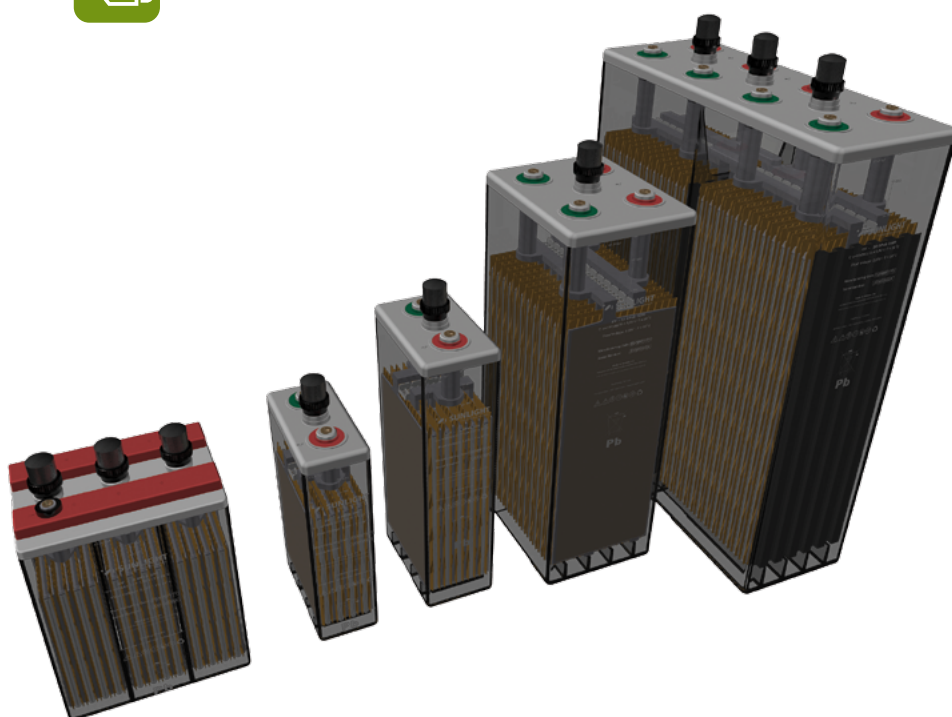
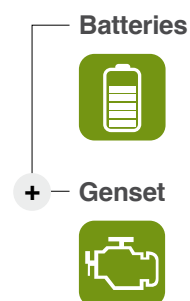
SYSTEM 1



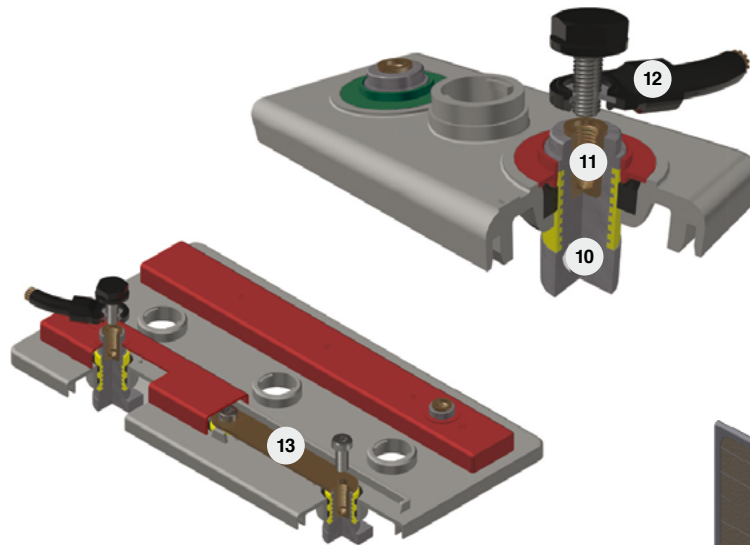
SYSTEM 2



SYSTEM 3



Technical features & product benefits



1 Positive Plates

- ⚙️ Tubular plate design
- ⚙️ Special low antimony lead alloy ($\leq 1.65\%$ Sb)
- ⚙️ Red Lead in-house production by 99,9% Pure Lead
- ⚙️ Dry Filling process
- ✓ Long cycle life
- ✓ Excellent cycling properties
- ✓ Quality and homogeneity
- ✓ High capacity performance
- ✓ Reduced corrosion
- ✓ Reduced self-discharge rate
- ✓ Increased tolerance even in cases of poor charging conditions

⚙️ Technical Features

✓ Product Benefits

2 Negative Plates

- ⚙️ Paste mixture ensures high adherence and cohesion
- ⚙️ Pasted negative plates of grid design
- ⚙️ Optimized low antimony lead alloy
- ⚙️ Robust construction
- ⚙️ Long life expander
- ✓ Stability
- ✓ Increased cyclic performance
- ✓ Long battery life
- ✓ Increased tolerance even in cases of poor charging conditions

3 Gauntlet

- ⚙️ Highly microporous material
- ⚙️ Fine pore structure
- ⚙️ Low electrical resistance
- ✓ Effective active material retention
- ✓ Eliminates active mass shedding

4 Bottom Bar

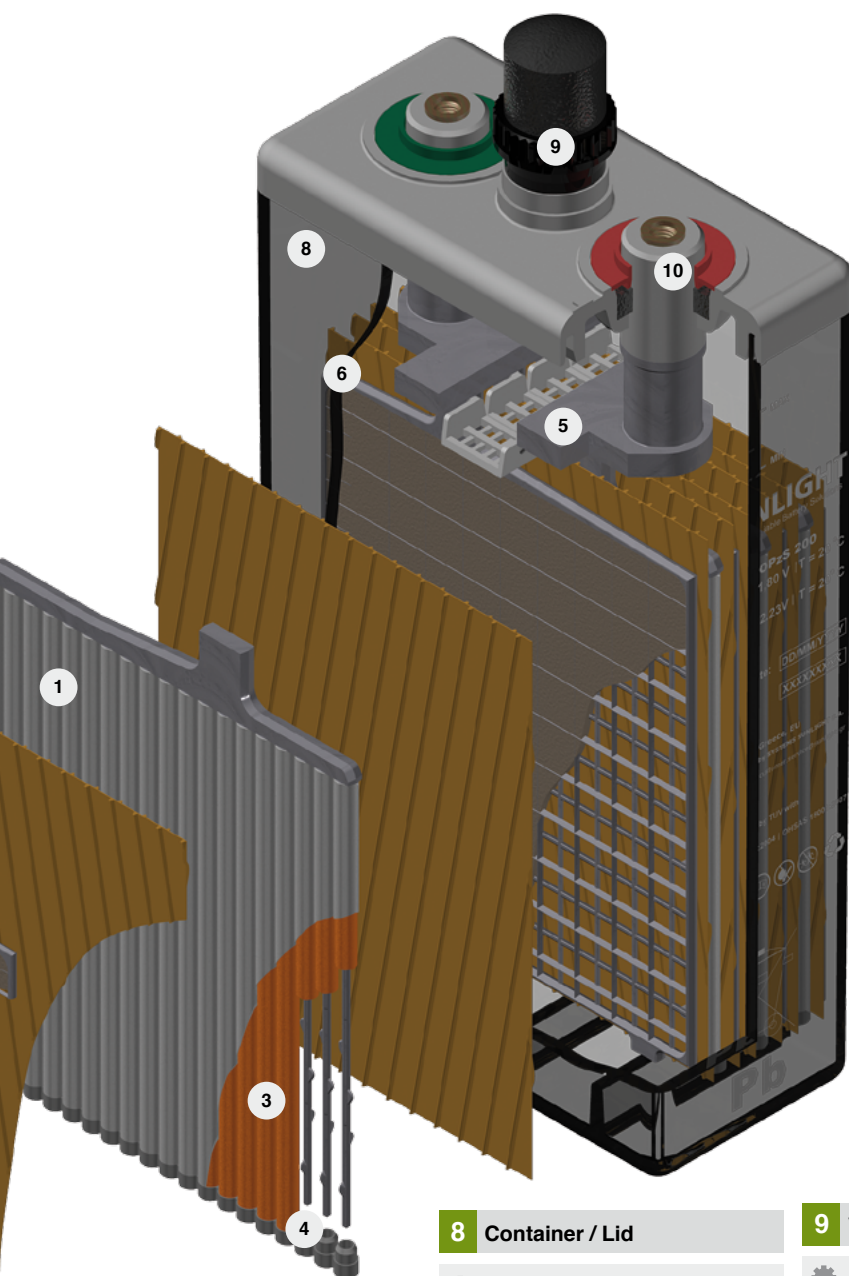
- ⚙️ Ultrasonic welding
- ✓ Secured fit to the gauntlet
- ✓ Long battery life

5 Pole Bridge

- ⚙️ Welding with high quality alloy
- ⚙️ Optimized design
- ✓ Increased robustness and durability
- ✓ Consistent and uniform polesbridge-plate block connection

6 Electrolyte

- ⚙️ High purity sulphuric acid with nominal density of 1.24 ± 0.01 kg/l (20°C)
- ✓ Low self discharge rates
- ✓ Excellent performance on deep discharges



7 Separators

- ⚙ High porosity grade material
- ⚙ Allow migration of ions during charge/discharge
- ⚙ More acid in the surrounding area of the plates
- ✓ Secured protection against short circuits
- ✓ High temperature stability
- ✓ Mechanical strength
- ✓ Low internal resistance

8 Container / Lid

- ⚙ High impact resistant, transparent SAN (Styrene Acrylonitrile) for the container
- ⚙ Robust ABS (Acrylonitrile Butadiene Styrene) Material for the lid
- ⚙ Optionally flame retardant (Class V0) material
- ⚙ Sealing between container - lid with polyurethane resin
- ⚙ 100% leakage quality control with high precision equipment
- ✓ Easy visual electrolyte level monitoring
- ✓ Long term leakage free operation
- ✓ Unsurpassed mechanical strength
- ✓ Robust and durable battery construction

9 Vent Plugs

- ⚙ Ceramic plugs available as an option
- ⚙ Low maintenance design
- ⚙ Flame arresting
- ⚙ Ceramic funnel plugs and recombination plugs also available as an option
- ✓ Efficient containment of acid fumes
- ✓ No electrolyte spillage
- ✓ Reduced water evaporation
- ✓ Funnel plugs allow topping-up and electrolyte density measuring without plug removal
- ✓ Increased safety
- ✓ Available also with taller poles with extra space for measurements

10 Sliding Poles

- ⚙ Premium sliding design with rubber seal in the lid
- ⚙ Corrosion resistance
- ✓ Effectively prevents top lid cracks and acid leakages
- ✓ Positive plate's expansion is safely absorbed
- ✓ Optimum current conductivity
- ✓ Perfect sealing
- ✓ Allow impedance measurements
- ✓ Safe and long operational life

11 Pole Insert

- ⚙ Brass insert
- ⚙ Threaded female M10 terminal posts
- ✓ High conductivity
- ✓ Maximum torque retention

12 External Intercell Connectors

- ⚙ Flexible
- ⚙ Copper
- ⚙ Fully insulated
- ⚙ Fixed with plastic head safety bolt and probe hole on the top
- ✓ High conductivity
- ✓ Maximum torque retention

13 Monoblocks' Internal Intercell Connectors

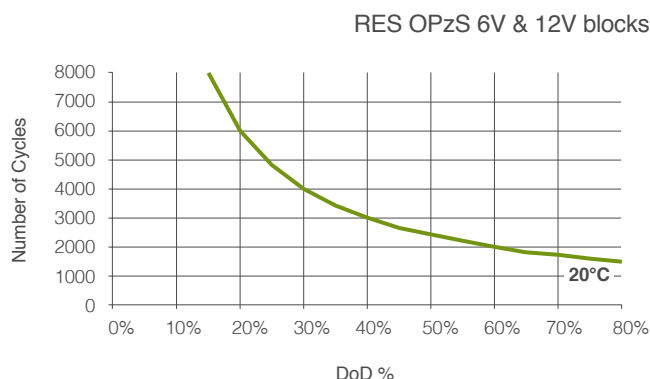
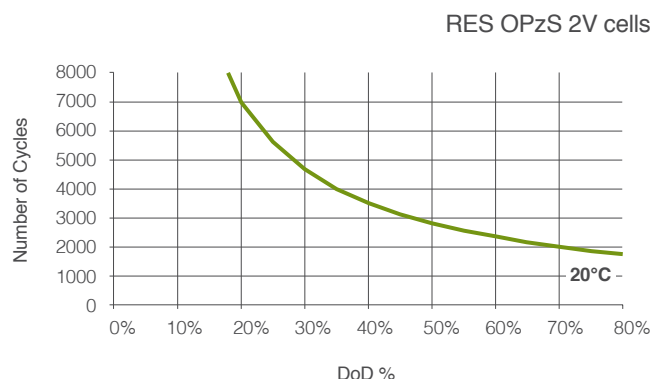
- ⚙ Copper bars premium design
- ⚙ Outside of the container connection
- ✓ High conductivity
- ✓ Safe and long operational life

The ideal energy solution for Renewable Energy Storage applications

Long cycle life

Tubular positive plates, unique sliding pole design and special alloys composition offer a 60% DoD cycle life of 2300 cycles for 2V cells and 2000 cycles for 6V & 12V blocks.

Number of Cycles vs. DoD



Outstanding performance and reliability

Products of optimum design made of high quality raw materials in European state-of-the-art production facilities and cumulative experience on advanced submarine battery manufacturing, ensure reliability in applications requiring high performance.

Minimum maintenance

Low maintenance design with reduced topping up requirements. Transparent container for easy visual electrolyte level monitoring.

Space optimization

Racks designed for optimal space utilization, quick installation and easy battery maintenance.

Flexibility

Design and production of customized products and services, high volume orders handling capability, fast delivery.

Operational safety

Extensive compliance testing performed under European and Global norms and verified by independent 3rd party certification agencies.

Complete battery solution

Complete and ready to install systems, batteries in filled and charged or dry charged state with all the necessary accessories. Extensive range of adding value products and services.

Peace-of-mind

24x7 experienced pre-sales and after sales support through SUNLIGHT Global Partners Network.

Optimum Total Cost of Ownership (TCO)

Low cost per cycle. Lifetime value maximized especially at hybrid systems where using batteries can greatly reduce the Genset daily run time resulting on fuel savings and less CO₂ emission.

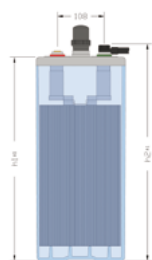
**Certified
Quality**

- Compliant with **IEC 61427** requirements for photovoltaic energy systems
- Fully compliant with **IEC 60896-11** requirements for vented lead-acid batteries
- Full conformity to **DIN 40736-1** specifications for OPzS cells and **DIN 40737-3** for OPzS blocks
- Compliant with the safety requirements of **IEC 62485-2** for stationary batteries
- Manufactured at SUNLIGHT's European production facilities, certified with **ISO 9001, ISO 14001, BS OHSAS 18001**

	Type	Positive Plates		Number of Poles	Rated Capacity (Ah at 20°C)					Dimensions (mm)				Poles Distance (mm)	Wet Weight (kg)	Dry Weight (kg)	Internal Resistance (mOhm)	Short Circuit Current (A)
		Number	Size (Ah)		C240 1.85 Vpc	C120 1.85 Vpc	C48 1.80 Vpc	C24 1.80 Vpc	C12 1.80 Vpc	Length	Width	Height 1	Height 2					
Cells	2V 2 RES OPzS 185	2	50	2	196	187	172	153	131	103	206	355	383	-	15.5	8.2	1.430	1420
	2V 3 RES OPzS 260	3		2	273	262	244	217	188	103	206	355	383	-	17.0	10.6	0.950	2120
	2V 4 RES OPzS 300	4		2	310	300	285	256	224	103	206	355	383	-	17.5	12.8	0.740	2720
	2V 5 RES OPzS 375	5		2	391	379	359	323	281	124	206	355	383	-	21.2	15.3	0.590	3420
	2V 6 RES OPzS 450	6		2	469	454	431	387	338	145	206	355	383	-	24.9	18.0	0.510	3940
	2V 5 RES OPzS 550	5	70	2	574	553	527	474	413	124	206	471	499	-	28.6	20.6	0.540	3750
	2V 6 RES OPzS 660	6		2	688	662	630	567	494	145	206	471	499	-	33.5	24.2	0.460	4400
	2V 7 RES OPzS 750	7		2	779	750	717	646	564	166	206	471	499	-	38.5	27.6	0.410	4950
	2V 5 RES OPzS 900	5	100	2	947	904	845	748	639	145	206	646	674	-	42.3	29.3	0.510	3950
	2V 6 RES OPzS 965	6		2	1006	966	916	816	703	145	206	646	674	-	46.5	33.7	0.430	4700
	2V 7 RES OPzS 1230	7		4	1286	1230	1154	1024	877	191	210	646	674	80	59.4	42.3	0.360	5600
	2V 8 RES OPzS 1275	8		4	1330	1278	1213	1083	934	191	210	646	674	80	63.5	46.7	0.310	6500
	2V 9 RES OPzS 1480	9		4	1547	1484	1403	1250	1076	233	210	646	674	110	73.5	52.3	0.280	7250
	2V 10 RES OPzS 1590	10		4	1656	1592	1511	1349	1165	233	210	646	674	110	77.7	56.7	0.250	8100
	2V 11 RES OPzS 1885	11	125	4	1974	1888	1776	1576	1350	275	210	646	674	140	87.7	62.4	0.240	8450
	2V 12 RES OPzS 1905	12		4	1986	1908	1810	1614	1391	275	210	646	674	140	91.9	66.8	0.220	9250
	2V 11 RES OPzS 2285	11		4	2369	2286	2173	1957	1698	275	210	797	825	140	108.9	77.0	0.230	8800
	2V 12 RES OPzS 2225	12		4	2296	2226	2142	1944	1701	275	210	797	825	140	114.0	82.4	0.220	9200
	2V 14 RES OPzS 2765	14		6	2868	2769	2639	2381	2069	399	214	772	800	2x110	145.8	100.3	0.190	10650
	2V 15 RES OPzS 2920	15		6	3018	2921	2797	2531	2208	399	214	772	800	2x110	150.9	105.9	0.170	11900
	2V 16 RES OPzS 2970	16		6	3064	2973	2861	2600	2279	399	214	772	800	2x110	156.1	111.4	0.156	12950
	2V 18 RES OPzS 3780	18		8	3916	3780	3589	3236	2811	487	212	772	800	3x110	183.7	128.6	0.137	14750
	2V 20 RES OPzS 4075	20		8	4217	4076	3885	3510	3057	487	212	772	800	3x110	194.0	139.5	0.122	16550
	2V 22 RES OPzS 4455	22		8	4615	4457	4247	3833	3335	576	212	772	800	3x140	219.6	153.7	0.114	17700
	2V 24 RES OPzS 4620	24		8	4770	4620	4430	4014	3508	576	212	772	800	3x140	229.8	164.9	0.105	19250
	2V 26 RES OPzS 4730	26		8	4869	4733	4564	4156	3656	576	212	772	800	3x140	240.1	175.8	0.098	20600
Blocks	6V 3 RES OPzS 240	3	50	2	251	242	231	209	184	233	224	345	394	-	41.1	30.5	3.18	1900
	6V 4 RES OPzS 280	4		2	293	284	275	251	223	272	205	332	375	-	46.4	34.1	2.52	2420
	6V 5 RES OPzS 385	5		2	403	389	373	338	298	380	205	332	375	-	59.8	42.0	2.13	2860
	6V 6 RES OPzS 405	6		2	422	408	398	364	323	380	205	332	375	-	66.8	49.3	1.86	3260
	12V 1 RES OPzS 85	1	50	2	90	86	81	73	65	272	205	332	375	-	41.0	27.8	17.20	700
	12V 2 RES OPzS 130	2		2	137	132	128	118	106	272	205	332	375	-	48.4	37.0	8.61	1400
	12V 3 RES OPzS 190	3		2	199	191	186	172	155	380	205	332	375	-	68.7	52.2	6.09	2000

Height 2 includes installed connectors and bolts.
 All dimensions and weights shown are subject to manufacturing tolerances.

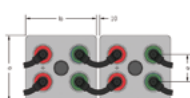
2V RES OPzS



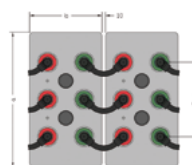
2V 2 RES OPzS 185
 2V 3 RES OPzS 260
 2V 4 RES OPzS 300
 2V 5 RES OPzS 375
 2V 6 RES OPzS 450
 2V 5 RES OPzS 550
 2V 6 RES OPzS 660
 2V 7 RES OPzS 750
 2V 5 RES OPzS 900
 2V 6 RES OPzS 965



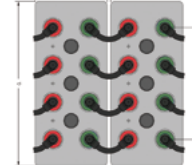
2V 7 RES OPzS 1230
 2V 8 RES OPzS 1275
 2V 9 RES OPzS 1480
 2V 10 RES OPzS 1590
 2V 11 RES OPzS 1885
 2V 12 RES OPzS 1905
 2V 11 RES OPzS 2285
 2V 12 RES OPzS 2225



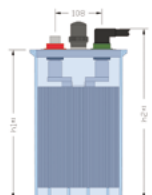
2V 14 RES OPzS 2765
 2V 15 RES OPzS 2920
 2V 16 RES OPzS 2970



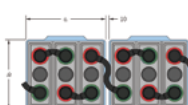
2V 18 RES OPzS 3780
 2V 20 RES OPzS 4075
 2V 22 RES OPzS 4455
 2V 24 RES OPzS 4620
 2V 26 RES OPzS 4730



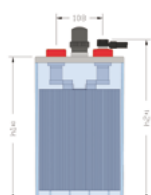
6V 3 RES OPzS 240



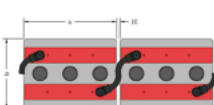
6V 3 RES OPzS 240



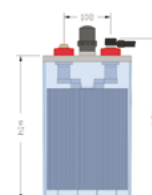
6V RES OPzS



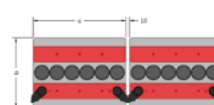
6V 4 RES OPzS 280
 6V 5 RES OPzS 385
 6V 6 RES OPzS 405



12V RES OPzS



12V 1 RES OPzS 85
 12V 2 RES OPzS 130
 12V 3 RES OPzS 190





Manufactured in Europe
delivered in more than **100** countries



Manufacturing Plant in Xanthi, Northern Greece

SYSTEMS SUNLIGHT reserves the right to change or revise without notice any information or detail given in this publication

www.systems-sunlight.com

Headquarters

2 Ermou & Nikis Street, Syntagma Square
105 63 Athens, Greece, EU
T +30 210 6245400
F +30 210 6245409

Manufacturing Plant

Neo Olvio
672 00 Xanthi, Greece, EU
T +30 25410 48100
F +30 25410 95446

Service Department

366 Tatoiou Street
136 73 Acharnes, Attica, Greece, EU
T +30 210 6245600
F +30 210 6245619

Member of SUNLIGHT GLOBAL PARTNERS NETWORK