TAB **TOPzS**

LOW MAINTENANCE TAB TOPzS VENTED STATIONARY BATTERIES.

The stationary batteries of the type TOPzS are manufactured according to the DIN 40736, EN 60896 and IEC 896-1 regulations. Individual cells (2V) are made from translucent PP containers.

DESIGN

POSITIVE ELECTRODE
» Tubular positive plate with low antimony alloy (<2 %)
NEGATIVE ELECTRODE
» Flat plate with long life expander
SEPARATION
» Microporous separator
ELECTROLYTE
» Sulphuric acid of 1,24 kg/l
CONTAINER
» Transparent PP
LID
» PP in green colour
POLE SEALING
» 100 % gas-and electrolyte-tight, rubber seal
POLE
» M10, brass insert
CONNECTOR
» flexible insulated copper cable, with cross-section of 35, 50, or 70 mm²
POLE SCREW
» M10, steel, insulated

INSTALATION

CELLS MUST BE INSTALLED IN METAL TRAYS

CHARGING

IU - CHARACTERISTIC
» Imax without limitation
FLOAT VOLTAGE
» U = 2,23 V/cell ± 1 %
BOOST CHARGE
» U = 2,35 to 2,40 V/cell

DISCHARGE CHARACTERISTICS

REFERENCE TEMPERATURE
» 20 °C at C10 (1,80 V/cell) and 25 °C at C100 (1,85 V/cell)
INITIAL CAPACITY
» 100 %
DEPTH OF DISCHARGE
» Normally up to 80 %
» More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

OPERATIONAL DATA

OPERATIONAL LIFE
» Up to 15 years
IEC 896-1 CYCLES
» 1200
SELF-DISCHARGE
» Approx. 3 % per month at 20 °C
OPERATIONAL TEMPERATURE
» -20 °C to 55 °C, recommended 10 °C to 30 °C
TESTS ACCORDING
» IEC 896-1, EN 60896-1, EN 61427
SAFETY STANDARD, VENTILATION
» EN 50272-2

STATIONARY BATTERIES OF THE TOPZS TYPE ARE SPECIALLY DESIGNED FOR SOLAR SYSTEMS. DUE TO THEIR EXTREMELY LOW SELF-DISCHARGING AND TUBULAR POSITIVE PLATES THEY ARE SUITABLE FOR OFF-GRID SOLAR SYSTEMS.

CELL TYPE	Dimensions (mm) L×W×H	Weight (kg)	C10 (Ah) Uf=1,80V at 20°C	C100 (Ah) Uf=1,85V at 25°C
3 TOPzS 265	198×83×472	12,4/18,4	265	345
4 TOPzS 353	198×101×472	16/23,3	353	458
5 TOPzS 442	198×119×472	20,2/29	442	575
4 TOPzS 500	198×101×720	24,3/35,2	500	650
5 TOPzS 625	198×119×720	30,3/43,2	625	812
6 TOPzS 750	198×137×720	38,0/53,5	750	975
7 TOPzS 875	198×173×720	44,0/64,2	875	1137
8 TOPzS 1000	198×191×720	50,2/72,5	1000	1300

MAINTENANCE

EVERY 6 MONTH
» Check battery voltage, pilot block voltage, temperature
EVERY 12 MONTH
» Take down battery voltage, block voltage, temperature

TAB **OPzV**

TAB OPzV VALVE REGULATED LEAD-ACID BATTERIES ARE THE IDEAL ENERGY SOURCE FOR MANY DIFFERENT STANDBY APPLICATIONS.

TAB OPzV combine the benefits of recombination technology (i.e. virtually no maintenance due to very low gas emissions) plus the advantages of conventional vented batteries with positive tubular plates (i. e. long life and excellent cycling capability).

The stationary batteries of the type OPzV are manuractured according to DIN 40742, EN 61427 and IEC 60896-1 regulations.

DESIGN

TUBULAR POSITIVE PLATES
» Special grid construction, pressure cast from antimony free alloy, with highly porous gauntlets that retain the active material
PASTED NEGATIVE PLATES
» Service lives consistent with the positive plates
ELECTROLYTE
» Gel structure
SEPARATORS
» Extremely high porosity and low internal resistance
CONTAINERS AND LIDS
» Made of plastic (ABS) material. Also available in ABS flame retardant material as an option (according to IEC 707 FV0)
TERMINALS
» Female treated terminal (M10) perfect contact and low resistance with flexible cable connectors
POST SEALS
» Prevents electrolyte leakage and terminal corrosion
CONNECTORS
» Flexible, fully insulated cable con nectors screwed (with 20 ±1 Nm) to the termi-nal with an insulated screw having a probe hole on the top for electrical measurement
ONE WAY RELIEF VALVE
» Opens at low pressure and is fitted with a flame arrestor device

INSTALLATION

CELLS ARE NORMALLY INSTALLED IN AN UPRIGHT POSITION ON STEEL STANDS

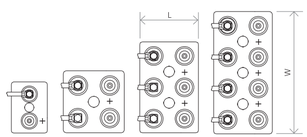
CHARGING

FLOAT VOLTAGE
» Standby use 2.25 V/cell
BOOST RECHARGE
» Maximum voltage of 2.35 - 2.40 V/cell with a maximum current of 0.25 C10 (A)

OPERATIONAL DATA

OPERATIONAL LIFE
» More than 15 years
IEC 896-1 CYCLES
» 1200
SELF-DISCHARGE
» Approx. 2 % per month at 20 °C
TESTS ACCORDING
» IEC 896-1, EN 60896-1, EN 61427

CELL TYPE	IEC 896-1 Ri (mΩ)	IEC 896-1 Isc (kA)	Dimensions (mm) L×W×H1/H2	Weight (kg)	C10 (Ah) Uf=1,80V at 20°C	C24 (Ah) Uf=1,85V at 25°C	C48 (Ah) Uf=1,85V at 25°C	C72 (Ah) Uf=1,85V at 25°C	C100 (Ah) Uf=1,85V at 25°C	C120 (Ah) Uf=1,85V at 25°C	C240 (Ah) Uf=1,85V at 25°C	№ of poles
4 OPzV 200	1,22	1660	103×206×354/380	19	204	220	233	239	243	245	249	2
5 OPzV 250	0,98	2080	124×206×354/380	23	255	275	291	298	303	306	311	2
6 OPzV 300	0,85	2490	145×206×354/380	28	306	330	349	358	364	367	373	2
5 OPzV 350	0,75	2770	124×206×471/496	31	357	386	407	418	425	428	436	2
6 OPzV 420	0,61	3350	145×206×471/496	36	429	463	489	502	511	515	523	2
7 OPzV 490	0,52	3900	166×206×471/496	41	500	540	570	585	595	600	610	2
6 OPzV 600	0,51	4060	145×206×643/688	49	612	661	698	716	728	734	747	2
8 OPzV 800	0,38	5390	210×191×664/669	65	816	881	930	955	971	979	996	4
10 OPzV 1000	0,3	6760	210×233×646/671	80	1020	1102	1163	1193	1214	1224	1244	4
12 OPzV 1200	0,26	8120	210×275×665/670	93	1251	1351	1426	1464	1489	1501	1526	4
12 OPzV 1500	0,23	8810	210×275×796/281	115	1530	1652	1744	1790	1821	1836	1867	4
16 OPzV 2000	0,17	11510	214×399×771/796	155	2040	2203	2326	2387	2428	2448	2489	6
20 OPzV 2500	0,14	14400	214×487×769/794	200	2550	2754	2907	2984	3035	3060	3111	8
24 OPzV 3000	0,12	17260	214×576×771/796	235	3060	3305	3488	3580	3641	3672	3733	8



FEATURES

» SAFE
» LONG LIFE
» VERSATILE
» RELIABLE
» MINIMAL GASSING
» DEEP DISCHARGE RESISTANCE

TAB **OPzS**

TAB OPzS STATIONARY BLOCKS (CELLS) ARE PRODUCED IN THE CONVENTIONAL LEAD-ACID TECHNOLOGY.

Stationary batteries of the OPzS type are intended for the supply of telecommunication facilities, computers, emergency lightning, alarm, control and monitoring systems in power plants and distribution stations, at railway stations, airports etc.

The stationary batteries of the type OPzS are manuractured according to DIN 40736, EN 60896, EN 61427 and IEC 896-1 regulations.

DESIGN

POSITIVE ELECTRODE
» Tubular plate with low antimony alloy (<2 %)
NEGATIVE ELECTRODE
» Flat with long life expander active material
SEPARATION
» Microporous separator
ELECTROLYTE
» Sulphuric acid of 1,24 kg/l at 20 °C
CONTAINER
» High impact, transparent SAN
LID
» ABS *(SAN)** in grey color
BLOCKS WITH BLIND CELLS
» 4V, 6V, 8V, 10V
PLUGS
» Ceramic plugs according to DIN 40740
POLE SEALING
» 100 % gas-and electrolyte-tight, sliding-pole
CONNECTOR
» Flexible insulated copper cable with cross-section of 35, 50, 70, 95 or 120 mm² *(35, 50 or 70 mm²)**
KIND OF PROTECTION
» IP 25 regarding DIN 40050, touch protected according VBC 4

CHARGING

IU - CHARACTERISTIC
» Imax without limitation
FLOAT CHARGE
» U = 2,23 V/cell ± 1 %, between 10 °C and 30 °C △U/△T = -0,004 V/K below 10 °C in the monthly average
BOOST CHARGE
» U = 2,35 to 2,40 V/cell, time limited

DISCHARGE CHARACTERISTICS

REFERENCE TEMPERATURE
» 20 °C at C10 (1,80 V/cell) and 25 °C at C100 (1,85 V/cell)
INITIAL CAPACITY
» 100 %
DEPTH OF DISCHARGE
» Normally up to 80 %
» More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

OPERATIONAL DATA

DESIGN LIFE
» Up to 20 years *(18 years)** at 20 °C
WATER REFILLING INTERVAL
» More than 2 years at 20 °C
IEC 896-1 CYCLES
» 1500 *(1200)**
SELF-DISCHARGE
» Approx. 2 % per month at 20 °C
OPERATIONAL TEMPERATURE
» -20 °C to 55 °C, recommended 10 °C to 30 °C
VENTILATION REQUIREMENT
» f1=0,5 (low-antimony alloy) according EN 50272-2
MEASUREMENTS ACCORDING
» DIN 40 737 part 1
TESTS ACCORDING
» IEC 896-1
SAFETY STANDARDS
» VDE 0510 part 2 and EN 50272-2
TRANSPORT
» No dangerous goods during road transport

TYPE	IEC 896-1 Ri (mΩ)	IEC 896-1 Isc (kA)	Dimensions (mm) L×W×H	Weight (kg)	C10 (Ah) Uf=1,80V at 20°C	C24 (Ah) Uf=1,85V at 25°C	C48 (Ah) Uf=1,85V at 25°C	C72 (Ah) Uf=1,85V at 25°C	C100 (Ah) Uf=1,85V at 25°C	C120 (Ah) Uf=1,85V at 25°C	C240 (Ah) Uf=1,85V at 25°C	
BLOCKS												
12V 1 OPzS 50	20,00	613	272×205×392	26/39	51	59	66	71	73	74	76	
12V 2 OPzS 100	9,30	1290	272×205×392	38/50	103	118	132	141	146	147	151	
12V 3 OPzS 150	6,90	1739	380×205×392	53/69	154	177	198	212	218	221	227	
6V 4 OPzS 200	2,20	2703	272×205×392	36/47	204	236	264	282	291	294	302	
6V 5 OPzS 250	1,90	3175	380×205×392	44/61	255	295	330	353	364	368	378	
6V 6 OPzS 300	1,60	3846	380×205×392	52/68	307	354	396	423	437	441	453	
CELLS												№ of poles
2 OPzS 100	1,48	1350	103×206×420	8,7/13,7	109	121	135	145	151	152	158	2
3 OPzS 150	1,08	1845	103×206×420	11/16	158	182	203	218	226	228	237	2
4 OPzS 200	0,84	2376	103×206×420	13/18	212	242	270	290	301	304	316	2
5 OPzS 250	0,69	3887	124×206×420	16/22	264	303	338	363	376	380	395	2
6 OPzS 300	0,58	3438	145×206×420	18/26	317	363	405	435	452	456	474	2
5 OPzS 350	0,64	3137	124×206×536	20/29	385	424	473	508	527	532	553	2
6 OPzS 420	0,55	3641	145×206×536	24/34	465	508	567	609	632	638	664	2
7 OPzS 490	0,48	4169	166×206×536	28/39	540	593	662	711	737	745	774	2
6 OPzS 600	0,45	4466	145×206×711	35/50	654	726	810	870	903	912	948	2
8 OPzS 800	0,33	6035	210×191×711	46/65	868	968	1080	1160	1204	1216	1264	4
10 OPzS 1000	0,26	7720	210×233×711	57/80	1090	1210	1350	1450	1510	1520	1580	4
12 OPzS 1200	0,23	8814	210×275×711	66/93	1304	1450	1620	1740	1810	1830	1900	4
12 OPzS 1500	0,23	8605	210×275×861	88/119	1659	1820	2030	2180	2260	2280	2370	4
16 OPzS 2000	0,17	12042	212×397×837	115/160	2200	2420	2700	2900	3010	3040	3160	6
20 OPzS 2500	0,13	15007	212×487×837	145/200	2751	3030	3380	3630	3760	3800	3950	8
24 OPzS 3000	0,12	17390	212×576×837	170/240	3298	3630	4050	4350	4520	4560	4740	8

The acid density in an electrically charged cell is 1,24 ± 0,1 kg/l at 293°K (+20°C).
When cycling only 80 % of the rated capacity shall be used. Deep discharge may reduce the operation life time.

The charging voltage for solar applications has to be restricted:
At daily discharge below 0,2 × C100 - 2,30V-2,35V
At daily discharge above 0,2 × C100 up to 0,3 × C100 2,35V-2,40V

MAINTENANCE

EVERY 6 MONTH
» Check battery voltage, pilot block voltage, temperature
EVERY 12 MONTH
» Take down battery voltage, block voltage, temperature

TAB **Motion**

PASTED 300 cycles according to EN 60254-1. (Voltage: 12V)

EN 61427 EN 50342 EN 60254-1 EN 50342 DIN 43593

TYPE	Dimensions (mm) L×W×H1/H2	Weight (kg)	BOX	Pcs. EUR pal.	LAYOUT	BHD	SOLAR C100 (Ah)	SLI C20 (Ah)	TRACTION C5 (Ah)	SLI EN (A)	SLI DIN (A)
50 P	242×175×190	16,7	L2	57	0	B13	70	60	50	480	300
60 P	278×175×190	19,3	L3	48	0	B13	85	75	60	560	340
85 P LS	353×175×190	26,2	L5	36	0	B13	115	105	85	800	480
85 P	312×176×212	24,4	59518	36	0	B0	122	104	85	640	395
100 P	344×172×212/234	29,9	60528	36	0	B0	140	122	100	680	410
115 P	344×172×262/284	36,4	62512	24	0	B0	150	135	115	720	430
110 P	509×175×182/208	37,4	MAC 110	24	3	B0	150	135	110	810	490
150 P	512×223×194/220	46,8	B	21	3	B0	190	180	150	1150	690
190 P	518×273×214/240	60,8	C	18	3	B0	250	225	190	1350	800

TUBULAR 1200 cycles according to EN 60254-1. (All Aquamatic)

EN 61427 EN 50342 EN 60896-1 EN 60254-1

TYPE	Dimensions (mm) L×W×H1/H2	Weight (kg)	BOX	Pcs. EUR pal.	LAYOUT	BHD	Voltage (V)	SOLAR C120 (Ah)	SLI C20 (Ah)	STATIONARY TRACTION C10 (Ah)	C5 (Ah)
95 T	344×172×212/234	30,0	60528	36	0	B0	12	130	115	104	95
110 t	344×172×262/284	37,3	62512	24	0	B0	12	150	132	120	110
Golf Cart T	244×190×270	31,3	Golf Cart	36	0	B0	6	240	218	200	180

TAB MOTION PASTED is a flooded semi traction battery with positive pasted plates.

Semi traction batteries of TAB MOTION PASTED type are intended for solar systems, battery driven carts, boats, wheelchairs, sweeping machines, truck applications, caravans and motorhomes, etc. Advantages: excellent vibration resistance, high rate discharge capability, high performance in difficult working conditions, etc.

TAB MOTION TUBULAR is a flooded small traction battery with positive tubular plates.

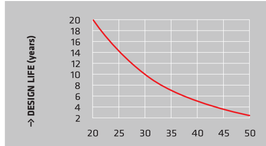
Small traction batteries of TAB MOTION TUBULAR type are reliable and durable, intended for applications which are used in harsh environments - cleaning machines, mobile elevating work platforms, electric elevating platform trucks and also perfect solution for storing energy.

TAB **OPzS SOLAR** batteries

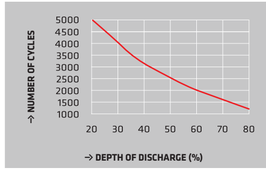
THE SOLAR BATTERIES ARE DISTINGUISHED FOR:

- HIGH CAPACITY
- LONG LIFE TIME
- REDUCED MAINTENANCE
- LOW SELF-DISCHARGING
- QUICK AND SIMPLE ACID LEVEL CONTROL
- ECONOMICAL WATER CONSUMPTION
- APPROPRIATE DIMENSIONS AND WEIGHT
- THE LOWEST AND CONSTANT MAINTENANCE CURRENT

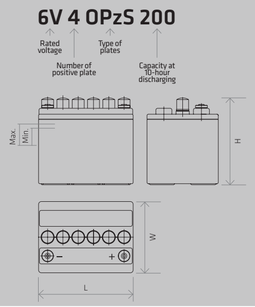
Design life vs. Temperature



No. of cycles vs. DOD



Technical data and dimensions



Application

Tab Solar batteries are intended for the supply of telecommunication facilities, computers, emergency lightning, alarm, control and monitoring systems in power plants and distribution stations, at railway stations, airports etc. Due to their extremely low self-discharging they are suitable for plants supplied by solar cells.

Construction

The positive armored plate is of a tubular type, which means that the active substance (PbO_2) is contained in special gauntlet made of polyester fibres and hardened by an impregnation compound. Such construction prevents escaping of an active substance during the operation and ensures a long life time. The grids of a positive and a negative plate are made of special low percentage (less than 2 %) antimony alloy with addition agents for improvement of crystalline structure of casting. Negative plates are pasted-type plates with special alloys maintaining porosity of an active substance during the operation. As an electrolyte, a diluted sulphuric acid (H_2SO_4) with a density of 1.24 ± 0.01 kg/l at 20 °C, and at a maximum permitted level is used. Separators separating the positive plates from the negative ones are made of microporous plastic material with a low electric resistance. The cell containers are made of transparent SAN, while lid of nontransparent SAN or ABS material (SAN for blocks, ABS for 2V cells). In a special process, the lids are tightly sealed to the container. The terminal plugs are sealed with rubber seals. This prevents any escape of electrolyte from the cells. Due to the transparent containers the electrolyte level is clearly visible, the maximum and minimum levels are marked on a self-adhesive acid-proof label on a container side. A cell plug seals well (ceramic filter), and prevents leakage of any sulphuric acid vapours, however, it lets through hydrogen and oxygen.

Two versions of batteries are being manufactured:

- **DRY-CHARGE VERSION:** a battery has to be filled up with an electrolyte and supplementary charged before use. The plates are already formed and in a special process protected against oxidation. They can be stored without problems.
- **ELECTROLYTE-CHARGE:** battery can be installed immediately, because it is already filled up with electrolyte and electrically charged as well. The capacity test has already been performed by the producer.

In case of problems with ordering we will be glad to advise and assist you in the selection of the suitable type of battery. FOR DETAIL INFORMATION PLEASE CHECK OUR OPERATION MANUAL.

V2106.3292 • production article JK

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TAB

SOLAR
BATTERIES