



STB Front Access batteries

 **SUNLIGHT**
creating energy



[Energy is what we do]

STB batteries introduction



Product Information

The STB range of SUNLIGHT Valve Regulated Lead Acid batteries has been specially developed for the needs of Telecommunications and for power applications which require high level of security and reliability.

The Valve Regulated Lead Acid (VRLA) battery is a rechargeable battery type with a safety valve, which allows the internal pressure to be released in case of overcharge. This battery type is maintenance free as there is no need for topping-up water or electrolyte during the entire service life.

The SUNLIGHT STB range features front-access batteries with capacity from 50 up to 170Ah which provide the benefit of easy installation and maintenance. They have been developed to offer superior performance in compact design, combining increased energy density and long life, in relation to conventional VRLA batteries.

The SUNLIGHT STB front access range is designed to fit 19", 23" and ETSI rack configurations. All the batteries include an integrated central degassing system which allows any excessive gas to be vented externally by using the optional degassing kit.

Features of the STB range

- Capacity Range: 50Ah to 170Ah
- Design Life: 12+ years at 20 °C
- Classified as: Long Life, according to Eurobat guide 1999
- Configurations: 12V blocks
- Case material: Flame retardant type (UL94 V-0) for all models
- Terminals: Front access terminals with plastic cover
- Connectors: Metal bar connectors provided as standard

Quality and Standards

- The Sunlight STB batteries comply with the international standard IEC 60896 Part 21/22 and BS 6290 Part 4.
- The SUNLIGHT Manufacturing Plant is certified according to ISO 9001:2000 and ISO 14001:2004.
- As a member of Eurobat organization Sunlight closely monitors the latest developments in the battery industry.
- Products are 100% tested and checked prior to shipment.
- Sunlight STB batteries are completely recyclable.



STB batteries technical features & applications



Technical Features

High Performance – Compact design

With superior performance and compact design SUNLIGHT STB batteries offer increased energy density and excellent performance at all discharge rates.

Maintenance free

During the service life, there is no need to check the level of the electrolyte or to add water. The gases produced during electrolysis are almost completely recombined to water (up to 99%) through an effective reaction between hydrogen and oxygen.

Safety Valve design

Excessive gas produced by overcharge or an incorrect charging method is released through the safety valve, which detects rising internal pressure and allows gas to exit; then automatically reseals.

Separator Technology

The Absorbent Glass Mat (AGM) separator, used in the SUNLIGHT batteries, is a highly porous material, which achieves maximization of oxygen diffusion and facilitates the reaction of active materials in the plates. The electrolyte is immobilized on the separator, so that the possibility of acid leakage is minimized. AGM technology is particularly suitable when a high energy or power density is required.

The separator in GEL technology is a microporous duroplastic which exhibits excellent high temperature stability and mechanical strength. The separator construction allows the active materials to react with the gelled electrolyte.

GEL technology is particularly suitable for applications where a high number of cycles or robustness under special temperature conditions is required.

In both technologies, the separator maintains a constant distance between the positive and the negative plates, protecting the battery from short circuit.

Performance on wide temperature range

SUNLIGHT STB batteries operate within a wide range of temperature while the optimum temperature is 20°C ~ 25°C.

Low Self-discharge Rate

Using a lead / calcium grid alloy, the self-discharge is minimum. The battery can be stored for 9 months under normal conditions (20°C – 25°C) with no permanent effect on the capacity or the expected service life.

Leak and spill proof container

The construction of SUNLIGHT battery guarantees that no electrolyte leakage can occur from the terminals or case. A highly resistant plastic material is used, flame retardant type (according to UL94 V-0).

Float service life

The expected service life is 12+ years in float/ standby applications (20°C).

Terminals access

Front terminals allow easy installation and maintenance and are covered by movable plastic cover to ensure safe operation.

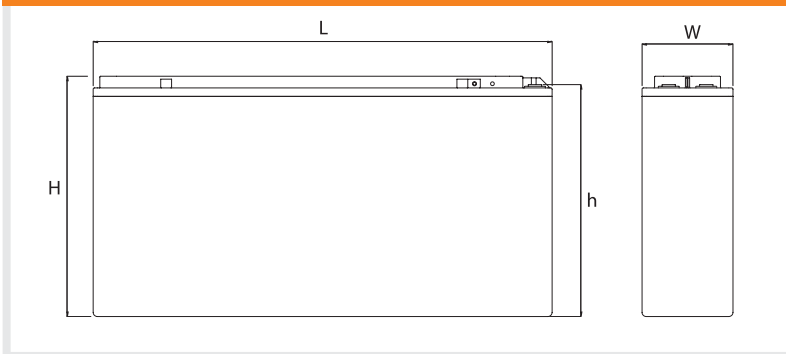
Applications

- Telecom Power Supply Systems
- Long Duration Emergency Back-up
- Information Technology Systems
- Wireless and Broadband Power Applications
- Power-critical Applications

STB Series

Battery Type	Nominal Voltage (V)	Nominal Capacity (Ah) 10h Rate at 1.80 Vpc	Dimensions (mm)				Typical Weight (kg)	Terminal Type	Internal Resistance (mΩ)	Maximum Charging Current (A)	
			L	W	h	Overall H					
AGM	STB 50 FA AGM	12	55	277	105	214	225	18.4	M6/ Φ14	4.5	15
	STB 70 FA AGM	12	80	563	114	171	182	26.0	M6/ Φ14	4.4	20
	STB 100 FA AGM	12	100	507	110	212	227	30.0	M6/ Φ14	4.3	25
	STB 110 FA AGM	12	103	395	110	274	285	32.6	M6/ Φ14	3.5	30
	STB 150 FA AGM	12	150	550	110	277	288	47.2	M6/ Φ16	3.2	40
	STB 170 FA AGM	12	180	560	125	307	320	59.5	M8/ Φ18	3.1	45
GEL	STB 50 FA GEL	12	50.4	277	105	214	225	18.2	M6/ Φ14	4.5	15
	STB 70 FA GEL	12	77	563	114	171	182	28.9	M6/ Φ14	4.1	20
	STB 100 FA GEL	12	97.5	507	110	212	227	32.0	M6/ Φ14	3.7	25
	STB 110 FA GEL	12	98	395	110	274	285	32.7	M6/ Φ14	3.4	30
	STB 150 FA GEL	12	144	550	110	277	288	47.4	M6/ Φ16	3.1	40
	STB 170 FA GEL	12	164	560	125	307	320	59.0	M8/ Φ18	2.9	45

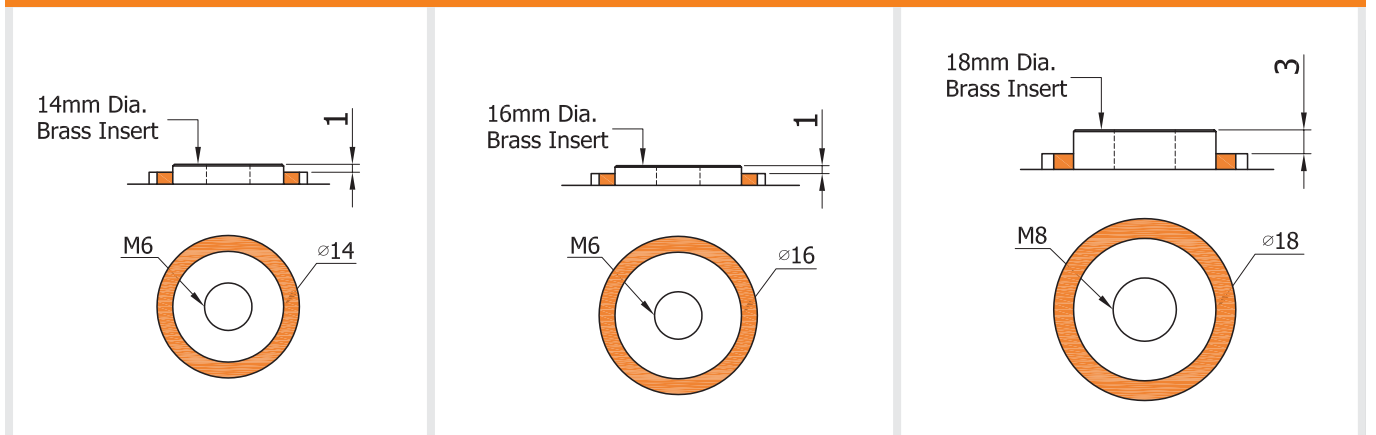
Case Dimensions



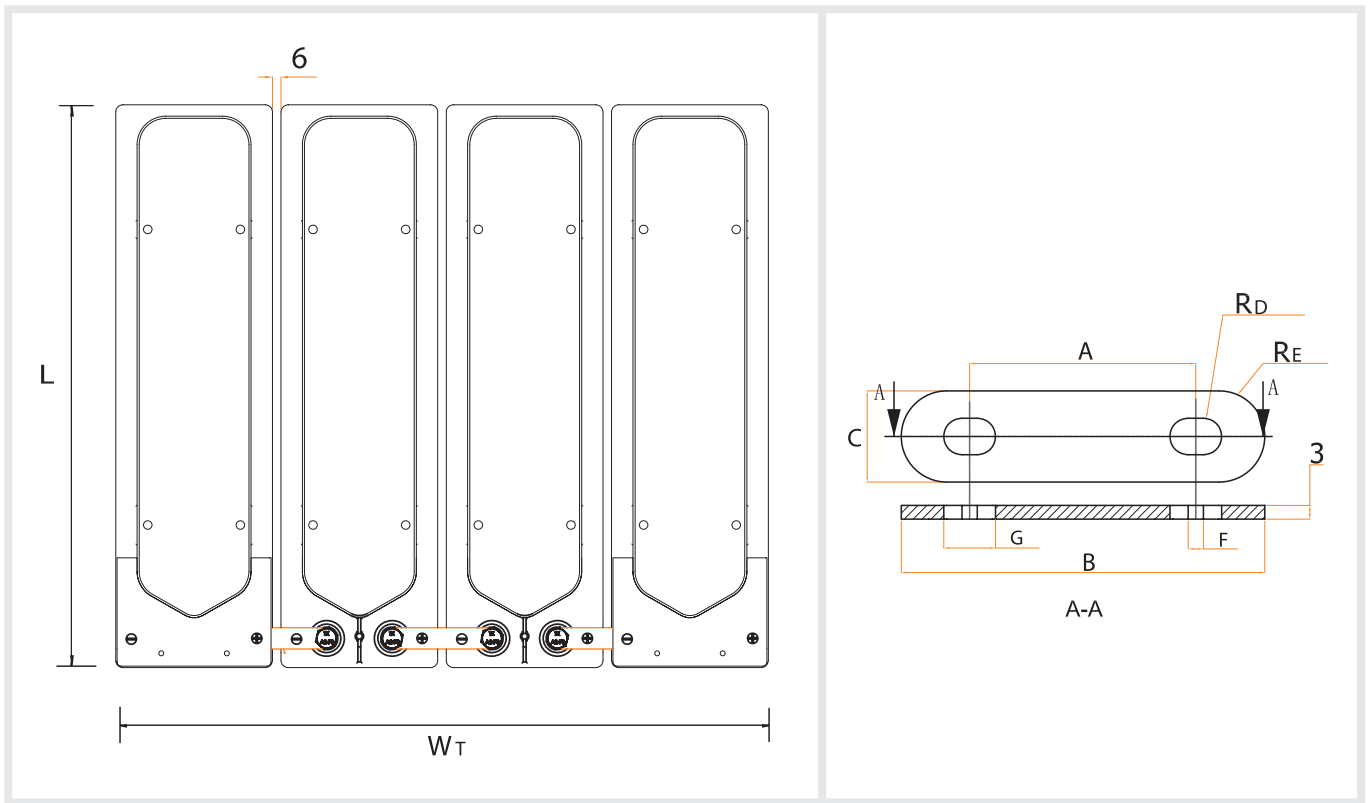
Terminal Torque Settings

M6 Terminal	6-8 Nm
M8 Terminal	8-12 Nm

Terminals



Connection Diagram



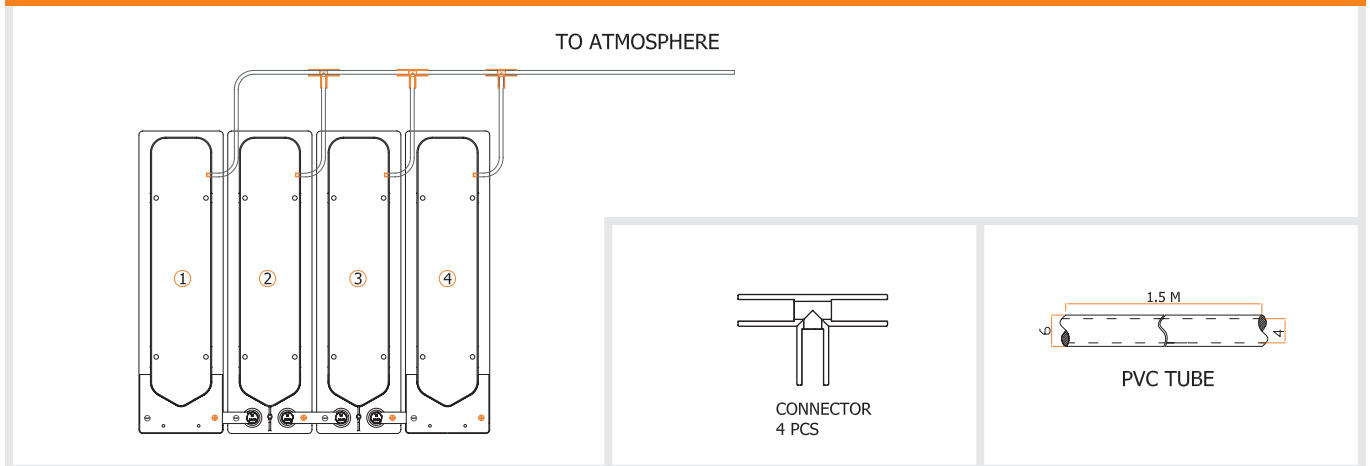
48V String Dimensions (mm)	STB 50 FA	STB 70 FA	STB 100 FA	STB 110 FA	STB 150 FA	STB 170 FA
L	277	563	507	395	550	560
W _T	438	474	458	458	458	527
Connector (mm)						
A	61.5	74	70	70	70	55
B	79.5	92	88	88	88	80
C	15	15	15	15	15	20
R _D	3.25	3.25	3.25	3.25	3.25	4
R _E	7.5	7.5	7.5	7.5	7.5	10
F	3	3	3	3	3	5
G	9.5	9.5	9.5	9.5	9.5	13

Degassing system

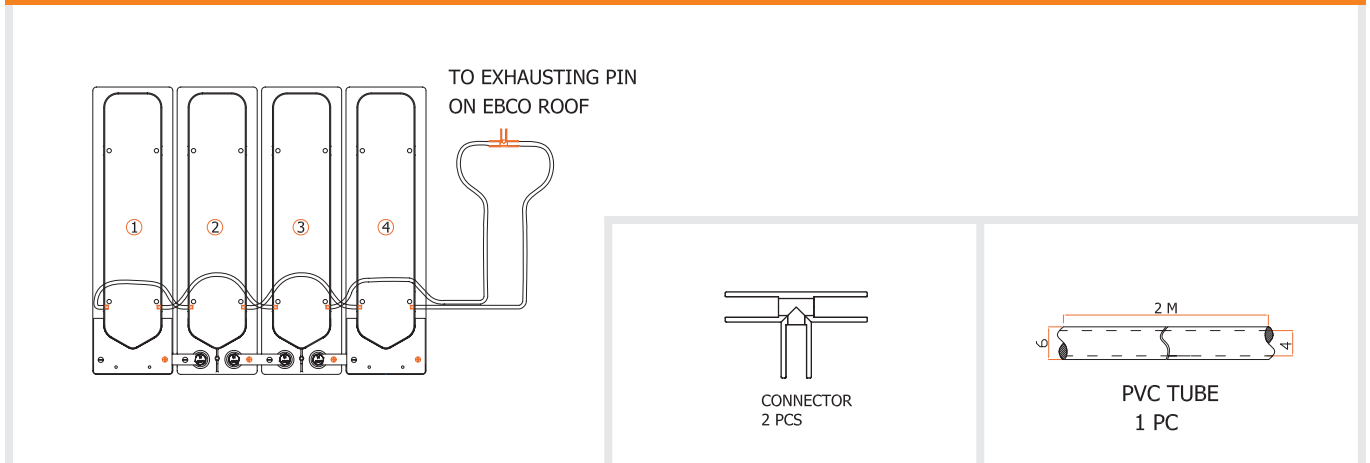
The Sunlight STB front access battery design comprises a central gassing system.

An optional degassing kit (gas collection system with plastic tube) is applicable for installation in cabinets, where the small excess of gas, generated during normal operation, needs to be vented externally.

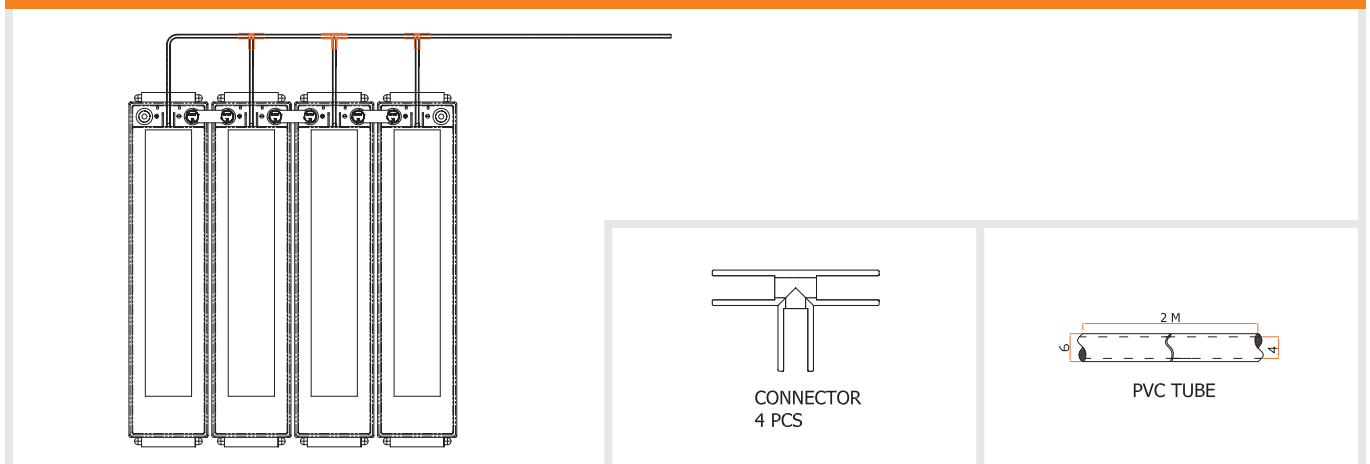
STB 50 FA



STB 70 FA, 100 FA, 110 FA, 150 FA

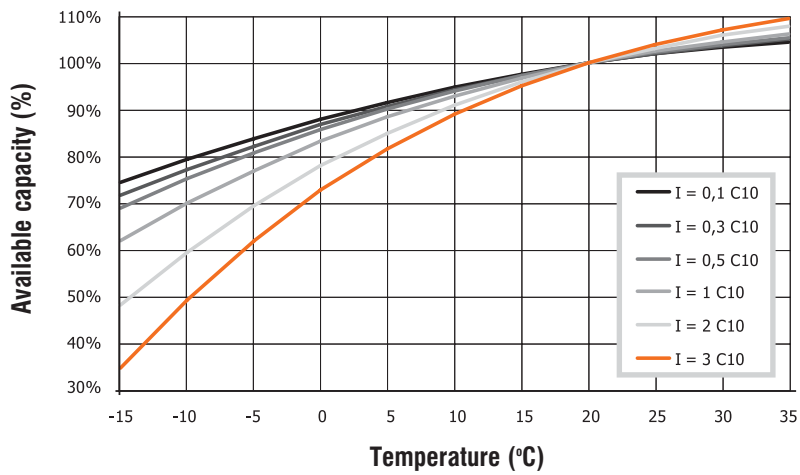


STB 170 FA

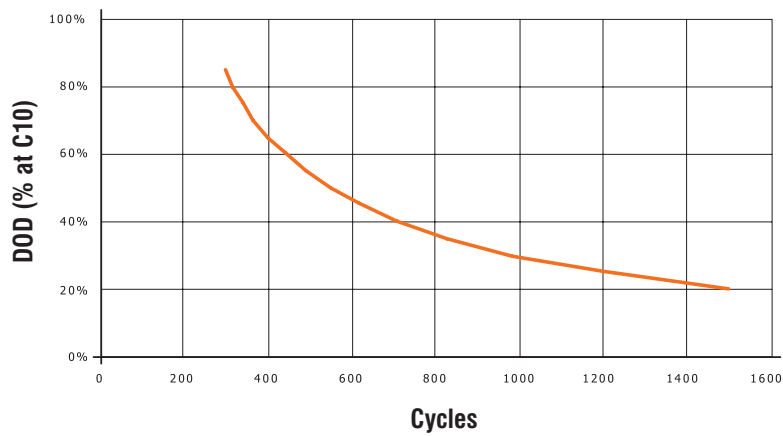


STB AGM Diagrams

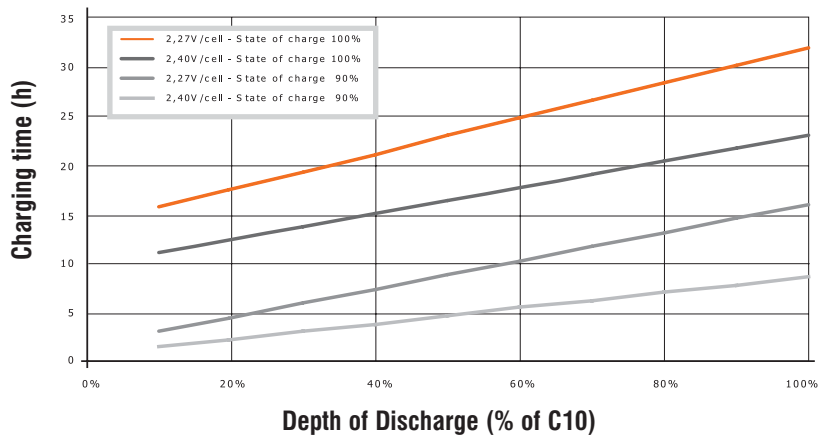
Available capacity vs. Temperature



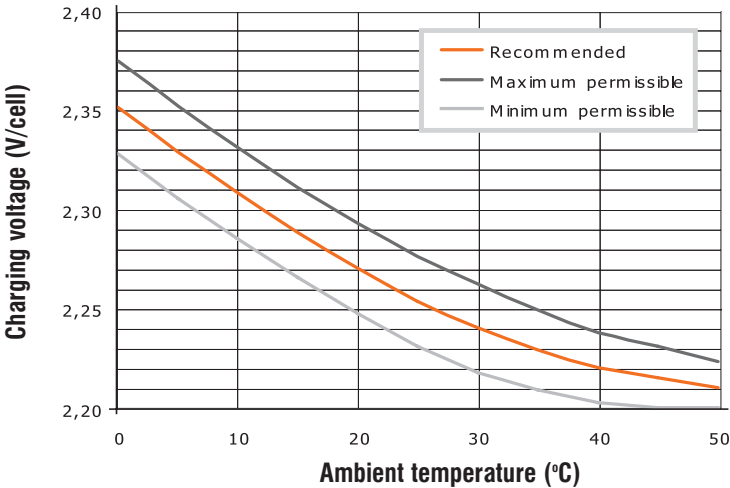
Cycle life vs. Depth of Discharge (DOD)



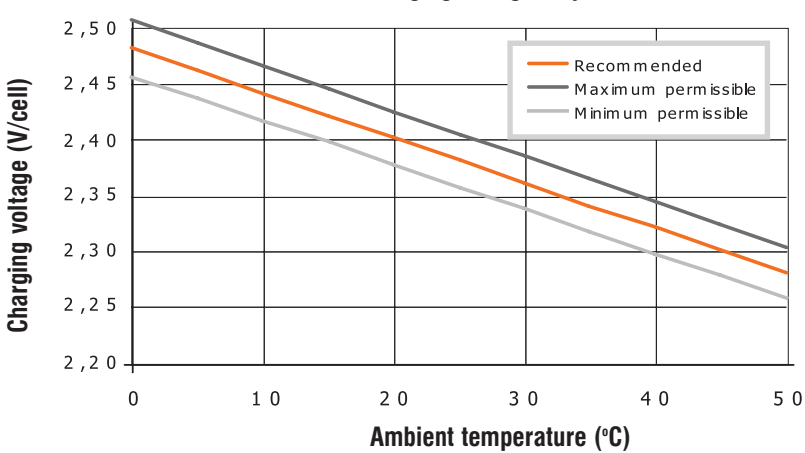
Typical charging time vs. Depth of Discharge (Initial charging current = 0,2 C10)



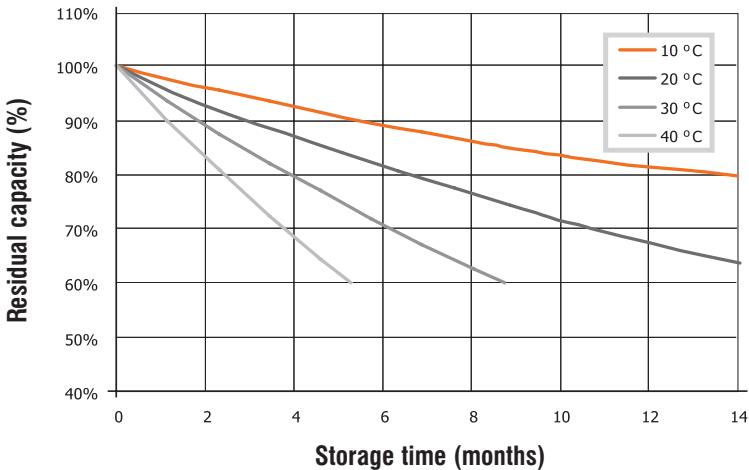
Charging voltage - Stand by use



Charging voltage - Cycle use

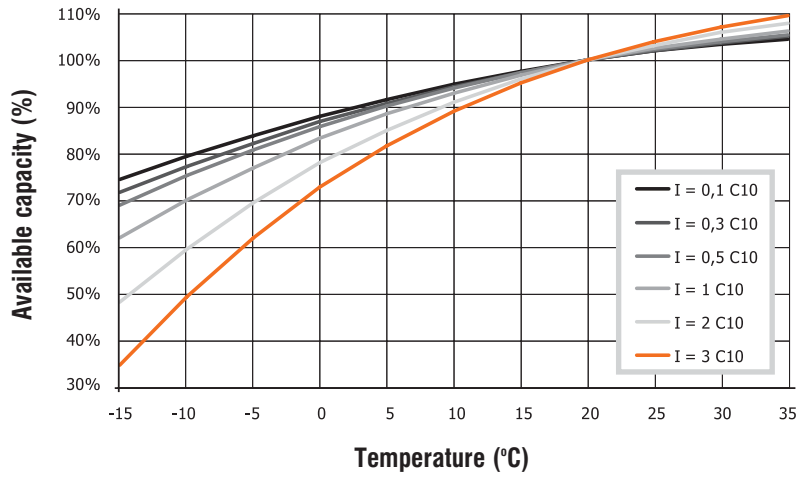


Self-discharge characteristics

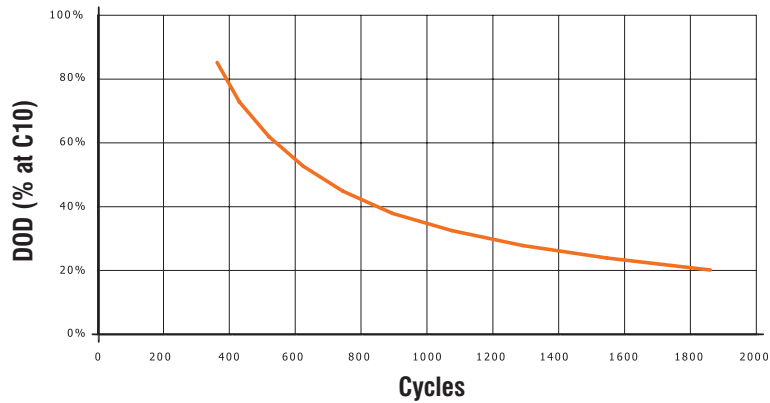


Temperature	Shelf Life
0 - 20 °C	12 months
21 - 30 °C	7 months
31 - 40 °C	4 months
41 - 50 °C	2,5 months

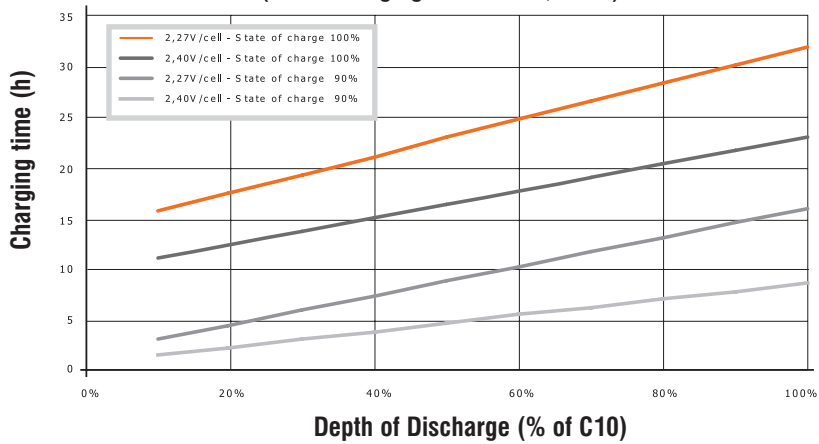
Available capacity vs. Temperature



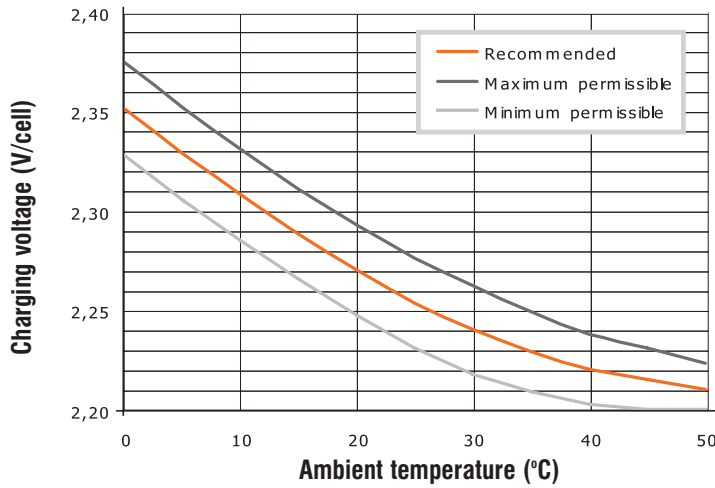
Cycle life vs. Depth of Discharge (DOD)



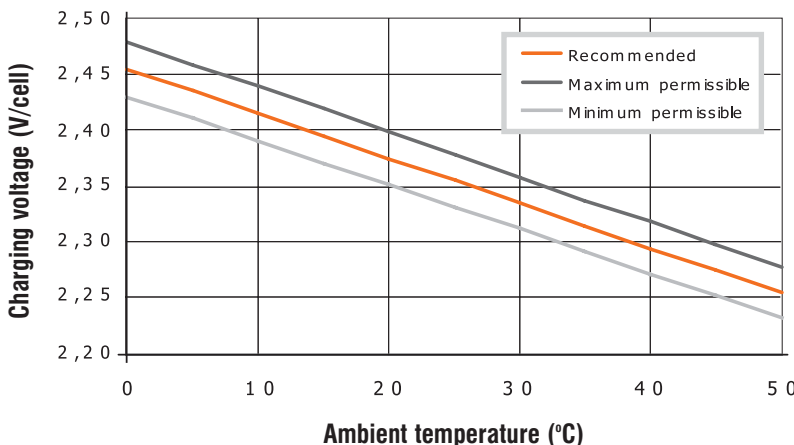
Typical charging time vs. Depth of Discharge (Initial charging current = 0,2 C10)



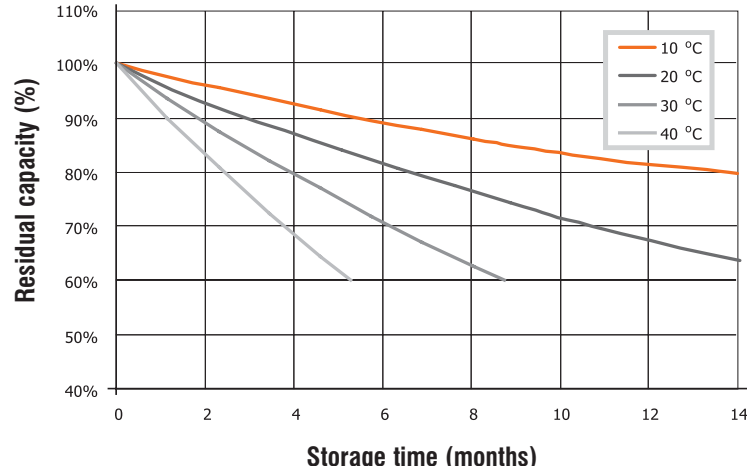
Charging voltage - Stand by use



Charging voltage - Cycle use



Self-discharge characteristics



Temperature	Shelf Life
0 - 20 °C	12 months
21 - 30 °C	7 months
31 - 40 °C	4 months
41 - 50 °C	2,5 months

Discharge Table in Amperes

AGM Technology

End voltage 1.85 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	139	111	96.0	83.4	72.7	64.4	57.5	51.8	47.1	37.4	27.2
STB 70 FA AGM	194	157	140	120	105	93.6	84.2	76.5	70.0	56.0	40.3	
STB 100 FA AGM	229	193	167	143	123	108	96.0	86.6	79.1	62.9	45.4	
STB 110 FA AGM	247	198	171	146	126	110	97.9	87.9	80.1	63.7	46.5	
STB 150 FA AGM	320	256	229	200	177	159	145	132	122	99.0	71.3	
STB 170 FA AGM	372	288	241	210	187	168	152	140	130	112	82.7	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	21.7	15.6	12.2	10.0	8.5	7.4	6.56	5.39	4.58	2.90	2.45
STB 70 FA AGM	31.8	22.6	17.7	14.6	12.5	11.0	9.78	8.01	6.82	4.34	3.68	
STB 100 FA AGM	36.4	26.7	21.5	18.2	15.7	13.8	12.3	10.1	8.63	5.52	4.67	
STB 110 FA AGM	37.7	27.9	22.3	18.6	15.8	13.9	12.3	10.1	8.59	5.54	4.70	
STB 150 FA AGM	56.2	39.7	31.3	26.0	22.4	19.8	17.7	14.6	12.3	7.60	6.36	
STB 170 FA AGM	65.8	47.1	37.3	31.1	26.8	23.7	21.2	17.6	15.0	9.44	7.93	

End voltage 1.80 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	158	118	100	87	75.1	66.1	59.1	53.2	48.4	38.3	27.7
STB 70 FA AGM	227	182	152	129	111	98	87.5	79.1	72.1	57.6	41.3	
STB 100 FA AGM	268	218	179	151	128	112	99	89.4	81.5	64.7	46.7	
STB 110 FA AGM	289	225	185	154	132	115	102	91.5	83.3	66.1	47.9	
STB 150 FA AGM	375	309	264	226	195	174	157	142	130	104	74.0	
STB 170 FA AGM	439	337	281	242	215	195	176	161	150	122	87.6	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	22.1	15.9	12.4	10.1	8.6	7.5	6.67	5.48	4.66	2.95	2.49
STB 70 FA AGM	32.5	23.0	18.0	14.9	12.7	11.1	9.89	8.09	6.89	4.39	3.71	
STB 100 FA AGM	37.3	27.2	21.9	18.5	16.0	14.1	12.6	10.3	8.78	5.61	4.75	
STB 110 FA AGM	38.8	28.6	22.9	19.0	16.2	14.2	12.6	10.3	8.79	5.65	4.80	
STB 150 FA AGM	57.9	41.1	32.4	26.9	23.1	20.4	18.2	15.0	12.7	7.87	6.62	
STB 170 FA AGM	68.6	49.0	38.7	32.2	27.7	24.4	21.9	18.2	15.4	9.68	8.14	

Design and/or specifications are subject to change without prior notice. For clarifications and updated information, please contact your local SUNLIGHT sales representative.

Discharge Table in Amperes

AGM Technology

End voltage 1.75 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	170	124	103	89	76.3	66.9	60.1	54.1	49.1	38.8	28.1
STB 70 FA AGM	245	193	159	133	114	100	89.5	80.7	73.6	58.4	41.7	
STB 100 FA AGM	289	230	186	154	131	114	101	90.8	82.5	65.6	47.1	
STB 110 FA AGM	312	238	192	158	135	117	104	93.5	84.9	67.2	48.9	
STB 150 FA AGM	404	324	274	233	201	179	161	145	133	106	75.0	
STB 170 FA AGM	490	365	299	258	227	204	184	169	157	126	90.5	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	22.4	16.0	12.5	10.2	8.7	7.6	6.75	5.54	4.72	2.99	2.53
STB 70 FA AGM	32.8	23.2	18.2	15.0	12.8	11.2	9.98	8.18	6.96	4.43	3.76	
STB 100 FA AGM	37.6	27.5	22.1	18.6	16.2	14.3	12.7	10.4	8.87	5.67	4.80	
STB 110 FA AGM	39.4	29.0	23.2	19.2	16.4	14.4	12.8	10.5	8.93	5.72	4.85	
STB 150 FA AGM	58.7	41.8	33.0	27.3	23.5	20.7	18.5	15.2	12.9	7.98	6.68	
STB 170 FA AGM	70.8	50.2	39.6	32.9	28.2	24.9	22.3	18.5	15.7	9.87	8.29	

End voltage 1.70 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	183	128	106	90	77.5	67.9	60.8	54.6	49.6	39.1	28.4
STB 70 FA AGM	263	203	164	137	116	102	90.2	81.6	74.4	58.9	41.9	
STB 100 FA AGM	310	242	191	157	133	116	102	92.0	83.6	66.2	47.6	
STB 110 FA AGM	335	246	196	161	137	119	106	94.8	86.0	68.0	49.3	
STB 150 FA AGM	434	338	282	240	205	182	163	148	135	107	75.7	
STB 170 FA AGM	518	378	311	266	234	208	189	173	159	128	91.3	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	22.7	16.2	12.6	10.3	8.8	7.6	6.80	5.57	4.74	3.01	2.55
STB 70 FA AGM	32.9	23.4	18.3	15.1	12.9	11.3	10.03	8.22	6.99	4.46	3.79	
STB 100 FA AGM	38.0	27.7	22.2	18.8	16.3	14.3	12.8	10.5	8.94	5.71	4.83	
STB 110 FA AGM	39.7	29.2	23.4	19.4	16.5	14.5	12.9	10.6	8.97	5.77	4.88	
STB 150 FA AGM	59.4	42.0	33.2	27.5	23.7	20.8	18.6	15.4	13.0	8.06	6.76	
STB 170 FA AGM	71.4	50.7	40.0	33.1	28.4	25.0	22.5	18.7	15.9	9.93	8.31	

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Discharge Table in Amperes

AGM Technology

End voltage 1.65 V/cell at 20°C

	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
Type	STB 50 FA AGM	189	133	108	91	78.2	68.7	61.4	55.2	50.2	39.4	28.7	22.9	16.3
	STB 70 FA AGM	272	207	168	139	117	102	91.2	82.2	75.1	59.2	42.3	33.2	23.5
	STB 100 FA AGM	321	249	195	160	134	117	103	92.7	84.3	66.8	47.8	38.3	27.9
	STB 110 FA AGM	346	254	200	164	139	120	107	95.7	86.8	68.8	49.8	40.1	29.5
	STB 150 FA AGM	449	346	288	242	208	185	164	149	136	108	75.9	59.9	42.3
	STB 170 FA AGM	544	392	320	273	239	213	193	176	162	129	92.2	72.0	50.9

End voltage 1.60 V/cell at 20°C

	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
Type	STB 50 FA AGM	201	136	110	92	79.1	69.3	61.9	55.7	50.6	39.7	28.9	23.0	16.4
	STB 70 FA AGM	289	215	172	141	119	103	92.1	82.7	75.5	59.6	42.5	33.3	23.6
	STB 100 FA AGM	341	257	199	162	136	118	104	93.3	84.8	67.2	48.1	38.5	28.1
	STB 110 FA AGM	368	261	204	166	140	122	108	96.5	87.7	69.5	50.3	40.4	29.8
	STB 150 FA AGM	477	360	295	247	212	186	166	150	137	109	76.8	60.4	42.6
	STB 170 FA AGM	578	403	328	278	242	215	195	178	163	130	92.7	72.4	51.2

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Discharge Table in Watts/cell

AGM Technology

End voltage 1.85 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	241	201	178	156	137	123	109	100	90.9	72.3	52.5
STB 70 FA AGM	350	281	242	213	189	170	155	142	131	106	77.0	
STB 100 FA AGM	389	330	287	252	224	199	177	161	147	119	87.7	
STB 110 FA AGM	432	349	303	266	237	213	193	177	163	129	92.1	
STB 150 FA AGM	595	484	417	366	323	290	264	242	222	179	129	
STB 170 FA AGM	729	593	491	418	368	331	300	278	258	217	160	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	41.8	29.9	23.6	19.5	16.7	14.6	12.9	10.6	9.0	5.7	4.8
STB 70 FA AGM	60.5	43.1	33.9	27.9	23.8	20.7	18.4	15.2	13.0	8.3	7.1	
STB 100 FA AGM	71.2	52.4	42.0	35.2	30.3	26.7	23.8	19.9	16.9	10.8	9.2	
STB 110 FA AGM	73.6	52.8	41.9	35.1	30.3	26.8	24.0	20.1	17.1	11.0	9.3	
STB 150 FA AGM	102	73.7	58.7	49.4	42.8	37.9	33.8	28.3	24.2	15.2	12.8	
STB 170 FA AGM	128	91.9	73.2	60.9	52.7	46.6	41.7	34.9	29.8	18.7	15.8	

End voltage 1.80 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	278	221	188	162	142	126	112	102	93	73.8	53.3
STB 70 FA AGM	404	311	260	225	198	177	160	147	136	109	79.0	
STB 100 FA AGM	444	367	310	270	236	207	184	167	152	122	90.7	
STB 110 FA AGM	499	394	330	286	251	224	203	185	169	134	95	
STB 150 FA AGM	680	548	460	393	343	307	277	253	232	185	134	
STB 170 FA AGM	841	674	558	474	416	375	340	314	290	233	169	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	42.4	30.4	23.9	19.8	16.9	14.8	13.1	10.8	9.2	5.8	4.9
STB 70 FA AGM	62.0	44.1	34.5	28.4	24.3	21.2	18.7	15.5	13.2	8.4	7.2	
STB 100 FA AGM	73.3	53.6	43.0	36.0	31.0	27.4	24.4	20.3	17.3	11.0	9.3	
STB 110 FA AGM	76	54.4	43.1	36.0	31.2	27.5	24.5	20.6	17.5	11.2	9.5	
STB 150 FA AGM	106	76.3	61.2	51.2	44.3	39.1	35.0	29.2	25.0	15.9	13.4	
STB 170 FA AGM	134	96.5	75.9	63.1	54.4	48.0	42.9	36.0	30.7	19.3	16.3	

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Discharge Table in Watts/cell

AGM Technology

End voltage 1.75 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	296	229	194	165	144	128	114	103	93.9	74.6	53.9
STB 70 FA AGM	431	323	271	232	203	182	164	150	138	111	80.0	
STB 100 FA AGM	479	393	325	279	242	213	189	171	156	124	92.1	
STB 110 FA AGM	532	411	343	295	257	230	207	188	172	136	97	
STB 150 FA AGM	732	575	478	404	353	313	283	258	237	189	137	
STB 170 FA AGM	897	707	588	499	436	390	352	323	297	239	173	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	42.9	30.6	24.1	19.9	17.0	14.9	13.2	10.9	9.2	5.8	4.9
STB 70 FA AGM	62.8	44.5	34.9	28.7	24.4	21.3	18.9	15.6	13.3	8.5	7.2	
STB 100 FA AGM	74.5	54.5	43.5	36.4	31.5	27.8	24.8	20.6	17.6	11.2	9.5	
STB 110 FA AGM	77.3	55.2	43.8	36.4	31.5	27.9	24.9	20.7	17.6	11.4	9.6	
STB 150 FA AGM	108	77.8	62.0	51.9	44.8	39.6	35.4	29.5	25.2	16.0	13.5	
STB 170 FA AGM	137	98.2	77.1	64.0	55.2	48.7	43.5	36.5	31.1	19.6	16.5	

End voltage 1.70 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA AGM	315	236	198	167	145	129	115	104	94.7	75.4	54.4
STB 70 FA AGM	458	338	278	236	206	184	166	151	139	112	80.7	
STB 100 FA AGM	509	417	337	288	247	217	192	174	158	126	93.2	
STB 110 FA AGM	566	424	352	301	262	233	209	190	173	137	97.6	
STB 150 FA AGM	779	596	492	415	360	320	288	262	240	191	138	
STB 170 FA AGM	955	738	606	512	445	398	359	329	302	242	175	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA AGM	43.2	30.8	24.2	20.1	17.1	15.0	13.2	10.9	9.3	5.9	4.9
STB 70 FA AGM	63.4	44.8	35.1	28.9	24.6	21.5	19.0	15.7	13.4	8.5	7.3	
STB 100 FA AGM	75.3	55.1	44.0	36.8	31.8	28.1	25.0	20.7	17.7	11.3	9.6	
STB 110 FA AGM	77.9	55.7	44.2	36.9	31.8	28.1	25.1	20.9	17.7	11.4	9.7	
STB 150 FA AGM	109	78.4	62.4	52.3	45.2	39.9	35.7	29.7	25.4	16.1	13.6	
STB 170 FA AGM	138	98.8	77.8	64.5	55.7	49.0	43.8	36.7	31.3	19.7	16.7	

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Discharge Table in Watts/cell

AGM Technology

End voltage 1.65 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
	STB 50 FA AGM	325	242	202	170	148	130	116	105	95.6	75.9	54.7	43.4	31.0
STB 70 FA AGM	472	346	284	240	209	186	167	153	140	113	81.4	63.8	45.2	
STB 100 FA AGM	524	424	345	292	251	219	194	175	159	128	93.8	75.8	55.4	
STB 110 FA AGM	591	438	360	305	265	235	210	192	174	138	98.4	78.4	56.0	
STB 150 FA AGM	802	613	502	421	365	323	290	265	242	193	139	109.6	79.0	
STB 170 FA AGM	983	754	614	518	449	401	362	332	305	244	176	139.2	99.3	

End voltage 1.60 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
	STB 50 FA AGM	344	249	206	172	149	131	117	106	96	76.2	55.0	43.5	31.1
STB 70 FA AGM	499	354	289	242	210	187	169	154	141	114	81.8	64.0	45.4	
STB 100 FA AGM	555	440	350	296	254	222	196	177	160	128	94.4	76.3	55.7	
STB 110 FA AGM	617	450	367	309	267	237	212	193	176	139	99.0	79.0	56.3	
STB 150 FA AGM	849	632	511	426	369	326	292	267	244	194	140	110.4	79.7	
STB 170 FA AGM	1020	766	624	524	454	405	365	334	308	245	176	139.8	99.7	

Discharge Table in Amperes

GEL Technology

End voltage 1.85 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	107	92	81.3	71.1	63.8	57.9	52.8	48.0	44.0	34.8	24.5
STB 70 FA GEL	164	138	122	107	96	86.2	77.5	70.0	63.5	50.3	36.2	
STB 100 FA GEL	193	167	149	132	119	107	98.2	90.2	82.7	65.3	45.7	
STB 110 FA GEL	209	169	141	127	113	105	97.0	89.6	82.4	65.5	46.4	
STB 150 FA GEL	282	229	205	178	156	141	129	118	110	89.3	64.1	
STB 170 FA GEL	335	259	217	189	168	151	139	129	121	101	74.9	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	19.0	13.4	10.5	8.7	7.55	6.67	5.95	4.94	4.21	2.67	2.25
STB 70 FA GEL	28.5	20.2	16.0	13.3	11.5	10.1	9.11	7.53	6.44	4.11	3.47	
STB 100 FA GEL	35.6	25.2	19.9	16.6	14.4	12.7	11.4	9.5	8.11	5.19	4.38	
STB 110 FA GEL	36.0	25.4	20.1	16.8	14.6	12.9	11.6	9.6	8.22	5.27	4.43	
STB 150 FA GEL	50.1	35.6	28.3	23.9	20.8	18.5	16.7	14.0	11.9	7.55	6.36	
STB 170 FA GEL	59.5	42.6	33.6	28.2	24.4	21.5	19.3	16.0	13.7	8.50	7.15	

End voltage 1.80 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	126	104	88.1	75.4	67.3	60.5	55.0	49.8	45.4	35.8	25.0
STB 70 FA GEL	192	148	129	113	100	88.7	79.3	71.5	65.0	51.5	37.0	
STB 100 FA GEL	227	185	161	140	124	112	102	93.2	85.3	67.0	47.0	
STB 110 FA GEL	245	203	170	145	127	114	105	95.3	87.1	68.4	48.0	
STB 150 FA GEL	330	276	231	194	169	151	136	125	115	92.9	66.5	
STB 170 FA GEL	395	303	253	218	193	175	159	145	135	108	78.8	
Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	19.4	13.6	10.8	9.0	7.75	6.83	6.12	5.04	4.30	2.73	2.31
STB 70 FA GEL	29.2	20.7	16.4	13.7	11.8	10.4	9.34	7.72	6.58	4.20	3.55	
STB 100 FA GEL	36.6	26.0	20.5	17.1	14.8	13.1	11.8	9.77	8.35	5.31	4.48	
STB 110 FA GEL	37.3	26.3	20.7	17.3	15.0	13.2	11.8	9.81	8.38	5.38	4.54	
STB 150 FA GEL	52.0	37.0	29.4	24.7	21.5	19.1	17.3	14.4	12.3	7.78	6.55	
STB 170 FA GEL	61.7	44.1	34.8	29.0	25.0	22.1	19.8	16.4	14.0	8.71	7.35	

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Discharge Table in Amperes

GEL Technology

End voltage 1.75 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	136	109	91.4	77.8	69.1	62.1	56.1	50.7	46.1	36.1	25.2
STB 70 FA GEL	207	158	133	116	101	90.0	80.4	72.4	65.8	52.1	37.4	
STB 100 FA GEL	245	193	166	143	126	113	103	94.2	86.1	67.7	47.4	
STB 110 FA GEL	264	213	178	151	132	118	107	97.3	88.5	69.2	48.5	
STB 150 FA GEL	356	289	239	200	173	155	139	128	117	94.3	67.3	
STB 170 FA GEL	441	328	269	232	205	183	167	152	141	112	81.5	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	19.5	13.8	10.8	9.0	7.80	6.90	6.16	5.10	4.34	2.76	2.33
STB 70 FA GEL	29.6	21.0	16.5	13.8	11.9	10.5	9.45	7.85	6.70	4.27	3.61	
STB 100 FA GEL	36.8	26.2	20.7	17.3	15.0	13.2	11.9	9.88	8.43	5.37	4.53	
STB 110 FA GEL	37.7	26.5	20.9	17.5	15.1	13.4	12.0	9.95	8.48	5.45	4.59	
STB 150 FA GEL	52.6	37.5	29.8	25.0	21.8	19.3	17.4	14.6	12.5	7.85	6.61	
STB 170 FA GEL	63.7	45.2	35.5	29.5	25.4	22.4	20.1	16.7	14.2	8.88	7.48	

End voltage 1.70 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	146	114	94.7	80.2	70.7	63.1	56.8	51.3	46.6	36.3	25.3
STB 70 FA GEL	223	164	137	118	103	91.3	81.3	73.2	66.4	52.6	37.7	
STB 100 FA GEL	263	201	169	146	128	115	104	95.0	86.9	68.1	47.7	
STB 110 FA GEL	283	222	184	156	136	121	109	98.5	89.1	69.7	48.7	
STB 150 FA GEL	382	303	248	207	178	158	142	130	119	95.3	67.7	
STB 170 FA GEL	467	340	280	239	210	187	171	156	143	115	82.2	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	19.6	13.8	10.9	9.1	7.84	6.92	6.20	5.13	4.38	2.78	2.36
STB 70 FA GEL	29.8	21.2	16.6	13.9	12.0	10.6	9.51	7.91	6.76	4.30	3.63	
STB 100 FA GEL	37.0	26.3	20.8	17.4	15.1	13.3	12.0	9.94	8.50	5.41	4.56	
STB 110 FA GEL	37.9	26.6	21.0	17.6	15.2	13.4	12.1	10.0	8.55	5.49	4.65	
STB 150 FA GEL	53.0	37.7	29.9	25.1	21.9	19.5	17.6	14.7	12.6	7.92	6.66	
STB 170 FA GEL	64.3	45.6	35.8	29.8	25.7	22.6	20.3	16.9	14.4	9.00	7.60	

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Discharge Table in Amperes

GEL Technology

End voltage 1.65 V/cell at 20°C

Time		5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
Type	STB 50 FA GEL	151	117	95.9	80.9	71.2	63.8	57.4	51.7	46.9	36.6	25.4	19.7	13.9
	STB 70 FA GEL	230	170	140	120	105	92.2	82.0	73.8	67.0	52.8	37.9	30.0	21.3
	STB 100 FA GEL	272	207	172	149	130	116	105	95.7	87.6	68.4	47.9	37.2	26.4
	STB 110 FA GEL	293	227	187	157	139	123	110	99.3	89.8	70.1	49.0	38.0	26.7
	STB 150 FA GEL	395	309	251	208	178	159	143	131	120	95.7	68.1	53.2	37.8
	STB 170 FA GEL	489	353	288	245	215	192	174	159	146	116	83.0	64.5	45.8

End voltage 1.60 V/cell at 20°C

Time		5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
Type	STB 50 FA GEL	160	122	98.3	82.3	72.3	64.4	57.7	52.0	47.1	36.7	25.5	19.7	13.9
	STB 70 FA GEL	245	176	144	122	106	93	82.6	74.3	67.5	53.2	38.2	30.1	21.4
	STB 100 FA GEL	289	212	175	151	132	118	106	96.9	88.3	68.9	48.1	37.3	26.5
	STB 110 FA GEL	311	237	191	160	141	124	111	99.8	90.3	70.4	49.2	38.2	26.8
	STB 150 FA GEL	420	322	257	212	181	161	145	132	121	96.2	68.3	53.4	37.9
	STB 170 FA GEL	520	363	295	250	218	194	177	160	147	117	83.5	64.9	46.1

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Discharge Table in Watts/cell

GEL Technology

End voltage 1.85 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	204	172	151	134	121	110	100	91.1	83.1	65.7	46.7
STB 70 FA GEL	305	259	235	206	185	167	150	136	125	99	70.7	
STB 100 FA GEL	360	307	281	247	221	201	185	171	157	125	88.3	
STB 110 FA GEL	389	315	285	254	227	208	189	173	159	127	89.1	
STB 150 FA GEL	524	428	386	334	297	268	244	226	210	170	122	
STB 170 FA GEL	656	533	442	376	331	298	270	250	232	195	143	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	36.8	26.5	21.0	17.6	15.1	13.4	11.9	10.0	8.5	5.4	4.6
STB 70 FA GEL	55.7	39.6	31.3	26.2	22.7	20.0	17.9	14.9	12.8	8.2	6.9	
STB 100 FA GEL	69.0	49.2	39.1	32.7	28.3	25.0	22.5	18.8	16.1	10.3	8.7	
STB 110 FA GEL	70.0	50.0	39.8	33.3	28.8	25.5	22.7	19.0	16.3	10.5	8.8	
STB 150 FA GEL	96.7	70.4	56.4	47.4	41.4	36.9	33.1	27.8	23.8	15.1	12.7	
STB 170 FA GEL	114	82.6	65.0	54.0	46.7	41.4	36.7	30.6	26.1	16.5	13.9	

End voltage 1.80 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	235	186	160	141	125	113	102	93.0	84.7	66.8	47.4
STB 70 FA GEL	353	293	249	214	192	172	153	139	127	101	71.7	
STB 100 FA GEL	416	364	309	265	233	212	192	176	161	128	90.0	
STB 110 FA GEL	449	373	317	273	242	220	198	180	165	130	91.4	
STB 150 FA GEL	606	508	426	361	314	282	256	237	219	175	126	
STB 170 FA GEL	757	606	502	427	375	337	306	282	261	210	152	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	37.5	26.9	21.4	17.8	15.4	13.6	12.1	10.1	8.7	5.5	4.7
STB 70 FA GEL	56.6	40.2	31.8	26.5	23.0	20.3	18.1	15.2	13.0	8.3	7.0	
STB 100 FA GEL	70.4	50.4	39.9	33.4	29.0	25.7	23.0	19.3	16.5	10.5	8.9	
STB 110 FA GEL	71.6	50.9	40.5	33.9	29.3	25.9	23.1	19.3	16.6	10.7	9.0	
STB 150 FA GEL	99.4	72.3	57.7	48.5	42.2	37.5	33.8	28.5	24.3	15.4	13.0	
STB 170 FA GEL	121	87.4	68.7	56.8	48.9	43.2	38.7	32.3	27.6	17.2	14.6	

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Discharge Table in Watts/cell

GEL Technology

End voltage 1.75 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	251	196	165	144	127	115	104	94.1	85.6	67.5	47.8
STB 70 FA GEL	376	304	256	219	196	174	155	141	128	101	72.2	
STB 100 FA GEL	444	378	318	271	238	215	195	179	163	129	90.8	
STB 110 FA GEL	479	388	326	279	247	223	201	184	168	132	92.4	
STB 150 FA GEL	646	527	439	370	321	287	261	241	222	177	127	
STB 170 FA GEL	807	637	529	449	392	351	316	291	267	215	156	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	37.8	27.1	21.5	17.9	15.5	13.6	12.2	10.2	8.7	5.5	4.7
STB 70 FA GEL	57.0	40.5	32.0	26.8	23.1	20.5	18.3	15.4	13.1	8.4	7.1	
STB 100 FA GEL	70.8	50.7	40.1	33.6	29.1	25.8	23.1	19.4	16.6	10.6	8.9	
STB 110 FA GEL	72.1	51.3	40.7	34.0	29.5	26.1	23.3	19.5	16.7	10.7	9.1	
STB 150 FA GEL	100	72.9	58.1	48.8	42.4	37.8	34.0	28.6	24.5	15.5	13.0	
STB 170 FA GEL	124	88.8	69.7	57.8	49.8	43.8	39.2	32.7	28.0	17.5	14.8	

End voltage 1.70 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min
	STB 50 FA GEL	267	205	170	147	130	117	105	95.0	86.3	67.9	48.1
STB 70 FA GEL	400	316	263	224	200	176	156	142	129	102	72.5	
STB 100 FA GEL	472	391	325	275	241	218	197	180	164	129	91.3	
STB 110 FA GEL	509	402	335	286	253	228	204	186	169	133	92.9	
STB 150 FA GEL	687	547	451	378	326	292	264	243	223	178	128	
STB 170 FA GEL	859	664	545	461	400	358	323	296	272	218	158	

Type	Time	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h	24 h
	STB 50 FA GEL	38.0	27.3	21.6	18.0	15.5	13.7	12.3	10.3	8.8	5.6	4.7
STB 70 FA GEL	57.1	40.6	32.1	26.8	23.2	20.6	18.4	15.4	13.2	8.5	7.2	
STB 100 FA GEL	71.0	50.9	40.4	33.8	29.3	26.0	23.3	19.4	16.7	10.6	8.9	
STB 110 FA GEL	72.7	51.6	40.9	34.2	29.6	26.2	23.4	19.6	16.7	10.8	9.1	
STB 150 FA GEL	101	73.3	58.5	48.9	42.6	37.9	34.2	28.8	24.6	15.5	13.1	
STB 170 FA GEL	125	89.4	70.2	58.0	49.9	44.1	39.4	33.0	28.2	17.7	14.9	

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Discharge Table in Watts/cell

GEL Technology

End voltage 1.65 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
	STB 50 FA GEL	275	211	174	149	132	118	105	95.4	86.9	68.5	48.5	38.3	27.4
STB 70 FA GEL	412	321	266	226	200	178	158	143	130	102	72.6	57.2	40.7	
STB 100 FA GEL	486	399	330	278	243	219	198	180	165	130	91.8	71.4	51.0	
STB 110 FA GEL	524	409	338	287	254	229	206	187	170	133	93.3	72.9	51.9	
STB 150 FA GEL	707	556	455	380	331	295	266	245	225	179	128	101	73.8	
STB 170 FA GEL	884	679	553	466	404	361	326	299	275	219	158	125	89.6	

End voltage 1.60 V/cell at 20°C

Type	Time	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	60 min	90 min	120 min	180 min
	STB 50 FA GEL	291	218	178	152	134	119	106	95.9	87.5	68.9	48.8	38.4	27.6
STB 70 FA GEL	436	333	272	229	202	179	159	143	130	102	72.9	57.4	40.9	
STB 100 FA GEL	514	414	336	280	245	220	199	181	165	130	92.1	71.7	51.2	
STB 110 FA GEL	555	424	346	292	258	231	207	188	171	134	93.5	73.1	52.0	
STB 150 FA GEL	749	577	466	386	334	297	269	247	226	180	129	102	74.2	
STB 170 FA GEL	918	690	561	471	408	365	328	301	277	220	159	126	90.1	



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SUNLIGHT MANUFACTURING PLANT

The SUNLIGHT Manufacturing Plant is headquartered in Northern Greece. Since 1991, there has been a systematic investment in the development of one of the most modern industrial units of Europe in accordance with the strictest international standards.

In a total area of 142,000 m², with indoor areas of more than 40,000 m², the SUNLIGHT Manufacturing Plant has six high-end production units that are recognized for their high specialization.

Aiming at the production of high added value and quality products, the production and assembly lines of the SUNLIGHT Industrial Unit are used for:

- Cylindrical Zinc-Chloride cells such as R6HD (AA), R14HD (C) and R20HD (D) sizes.
- Advanced Lead-Acid batteries for submarine propulsion.
- Silver-Zinc batteries for combat and exercise torpedoes.
- Stationary and traction Lead-Acid batteries (vented type).
- Sealed Lead-Acid Batteries (VRLA).
- Autonomous Photovoltaic Hybrid Power Supply Systems.
- Battery packs for military and commercial applications.
- Assembly of Power Supply Systems for telecommunication applications.
- Assembly of Uninterruptible Power Systems (UPS).
- Assembly of Industrial Rectifiers.
- Assembly of Generating Sets ranging from 5 to 3,000 KVA.

MANAGEMENT SYSTEMS for QUALITY, ENVIRONMENTAL CONTROL, OCCUPATIONAL HEALTH & SAFETY

The SUNLIGHT Manufacturing Plant has established and maintains management systems for Quality (ISO 9001), Environmental control (ISO 14001) and Occupational Health and Safety (OHSAS 18001).

comrade design



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