SINCE 1995

XIAMEN SONGLI GROUP LIMITED
XIAMEN SONGLI IMPORT AND EXPORT CO., LTD
XIAMEN SONGLI NEW ENERGY TECHNOLOGY CO., LTD
SONGLI (JINJIANG) NEW ENERGY TECHNOLOGY CO., LTD

Add: 19th Floor, Rongxinsheng Operation Center, Guanyinshan, Siming District,Xiamen, Fujian, China.
Http:// www.songligroup.com | E-mail: sales@songligroup.com | Tel: 86-592-3255613 | Fax: 86-592-3255606

About us

TCS®

VRLA BATTERY

VALVE-REGULATED SEALED LEAD-ACID BATTERY

SINCE 1995

PRODUCT CATALOG

TCS Sales Network ★ TCS FACTORY ● CUSTOMERS

Corporate website

www.songlibattery.com

Alibaba store

tcsbattery.en.alibaba.com

360° Factory Virtual Tour

SONGLI-Battery

CATALOGUE

PRODUCT CERTIFICATE

Songli has a professional quality management system and successfully acquired the recognition of various standards such as ISO9001, ISO14001,CE,UL.

Company Profile /

Xiamen Songli New Energy Technology Limited ("Songli"), was founded in 1995, which specialized in advanced battery research, development, production and marketing. Songli has been one of the most specialized battery manufacturers in China.

Songli has always kept rapid growth. Our production base covers an area of more than 400,000 square meters, with 2000 employees and professional technical & quality engineering department. Songli has advanced battery production lines and has been continuously introducing the world's leading automated machines and manufacturing equipment.

Songli mainly produces lead acid batteries, AGM VRLA batteries, Deep cycle batteries, GEL batteries, 2V, OPzV, OPzS, the products are widely used in motorcycles, electric bicycles, cars, solar, wind, telecommunication, emergency, industries and other special purposes. The production can be reached up to 2,000,000 batteries per month. The total annual capacity is more than 4,000,000 KVAH.

Songli Group has grown into a major battery enterprise, and gradually develops into one of the largest domestic battery manufacturers. We have a quality assurance system with ISO 9001, ISO 14001 quality management system certification.

With rich experience in the production of battery, a perfect innovation system, a good relationship with customers and reliable sales and after-sales service, we are managing stable dealerships as well as service agencies in the domestic and global markets, our products have been reached out to more than 100 countries and regions, including Southeast Asia, the Middle East, America and Africa.

With an aim to become one of the leading brands in the world, we make sure every battery is from our commitment to the best quality.

Dining Bar

Office

Exhibition Room

Production

Workshop /

Songli has the international first-class battery production equipments and technologies, introducing and strictly following the international advanced standards and production process.

With strict quality control procedures, Songli is aim to produce high quality products and provide a powerful guarantee, to lay a solid foundation for our reputation.


Production Workshop


Charging Workshop


Grid Casting


Milling Workshop


Acid Equipment

PRODUCTION STEPS

1.Grid Making

2.Powder Processing

3.Coating

4.Solidify

5.Auto Plates Cutting

6.Auto Wrapping

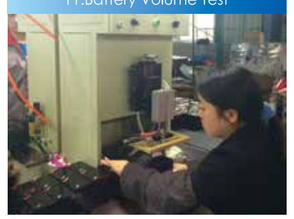
7.Welding Machine

8.Capping Glue

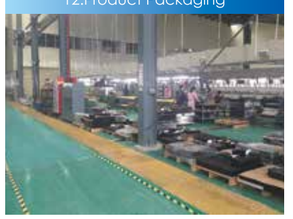
9.Auto Acid Filler

10.Charging Workshop

11.Battery Volume Test



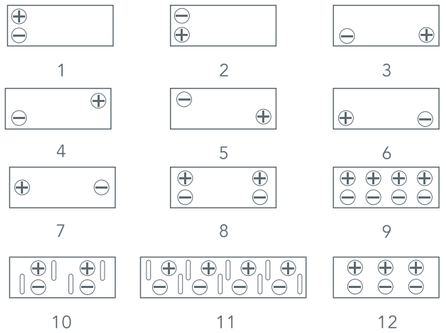
12.Product Packaging



STORAGE

APPLICATION SCENARIO:

TERMINAL DIRECTION:



PRODUCT DESCRIPTION:

Safety: no leakage on battery terminal, ensure using in safe and reliable conditions.

Maintenance free: due to all internal generated gas restore to water, do not need water replenishment

Exhaust air system: it can exhaust excess gas and make air pressure up to normal range when battery overcharges and internal pressure is over high, this time safe valve will close by itself, so there will be no additional gas accumulation.

No free acid: special separator adsorb electrolyte, so there is no free acid inside battery, then battery can be installed in various positions.

Outer Box

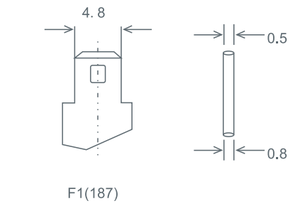
Battery

BATTERY

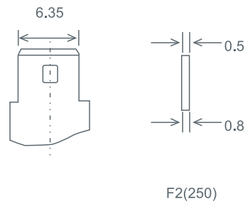
TERMINAL DIMENSIONS(mm):

Type	A	B	C	D	Material
F5	16.5	6	15	6.2	Lead
F6	18	3	19	7	Copper
F7	18	9.6	18	9.5	Lead
F8	26	8	24	8.6	Lead
F9	26.5	10	23	8.5	Lead
F10	26	8.3	23	8.5	Lead
F11	27	8.3	26	9	Lead
F12	12	2	14	5.5	Copper

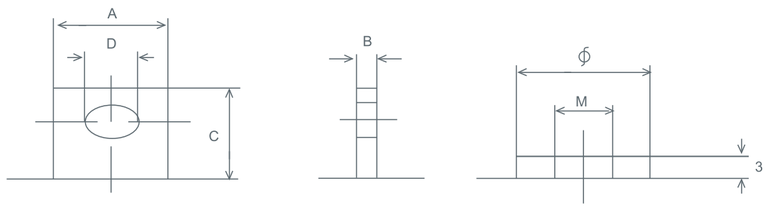
Type	M	ϕ	Material
D1	4	10	Copper
F12	8	20	Copper
F13	8	16	Copper
F14	6	14	Copper
F16	8	18	Copper
F18	5	12	Copper
F19	6	16	Copper



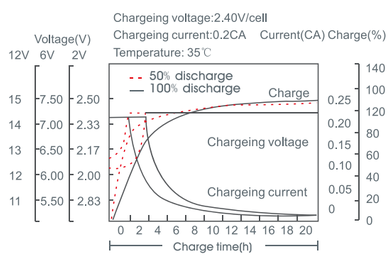
F1(187)



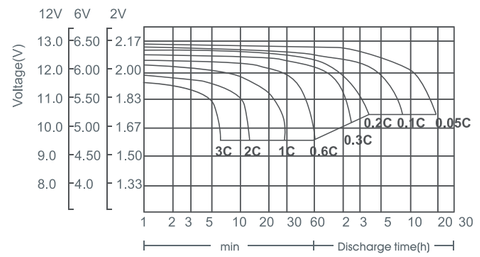
F2(250)



● **Charge characteristic curve**



● **Small size battery Discharge characteristic curve**



Small

SMALL SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics

+

· Sealed structure, maintenance free (Don't need to add water during using process).

· Designed floating service life: 5 years at 25°C.

· Stable performance, small internal resistance and good high rate discharge performance.

· Self-discharge rate ≤ 3% /month.

· Wide operating temperature range from -20°C to 50°C.

· Very good cycle performance: up to 500 cycles@50% DOD.

· Excellent deep discharge recovery capability.

Small

SMALL SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

Summary

Small size batteries have different voltages such as 4V, 6V and 12V. With the small size and weight, it is most widely used in our daily life.

Applications

Emergency light

- UPS/EPS systems
- Emergency systems
- Wheel Chairs
- Electric Powered Toys

Medical equipments

- Medical Equipment
- Power Tools
- Control System
- Electronic scale

Electronic scale

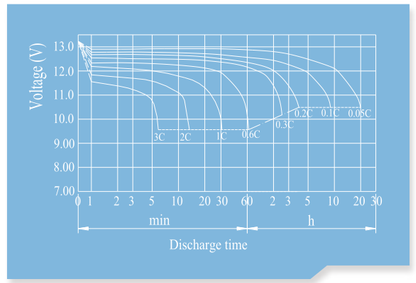
- Rolling shutter door
- Outdoor mobile speakers
- Electric scooter
- Electronic cash registers

Small

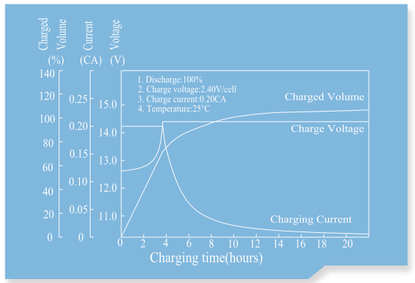
SMALL SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

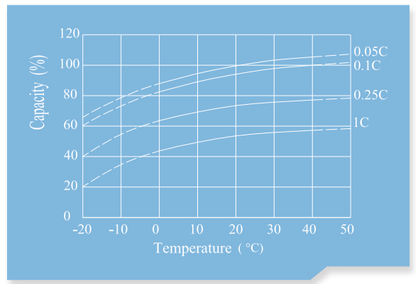
Experimental curve



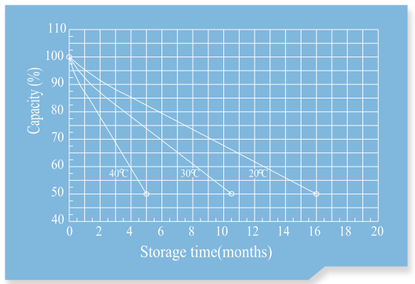
DISCHARGE CHARACTERISTICS(25℃)



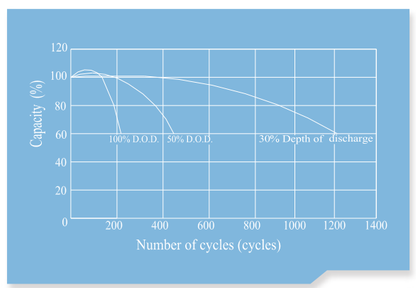
CHARGING CHARACTERISTICS(25℃)



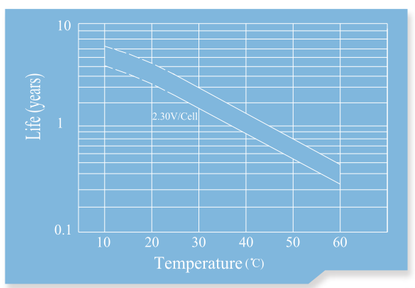
EFFECT OF TEMPERATURE ON CAPACITY



SELF DISCHARGE CHARACTERISTICS



CYCLE LIFE IN RELATION TO DEPTH OF DISCHARGE



EFFECT OF TEMPERATURE ON FLOAT LIFE

Small

SMALL SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SL4-3.5S	4	3.5	48	48	102	108	F2	3	0.41
SL4-4.5	4	4.5	48	48	102	108	F2	3	0.48
SL6-1.2	6	1.2	97	24	52	58	F1	6	0.29
SL6-2.8	6	2.8	66	33	97	104	F1	4	0.43
SL6-3.5S	6	3.5	70	47	101	107	F1	4	0.61
SL6-4E	6	4	70	47	101	107	F1	4	0.65
SL6-4	6	4	70	47	101	107	F1	4	0.67
SL6-4.5	6	4.5	70	47	101	107	F1	4	0.71
SL6-4.5H	6	4.5	70	47	101	107	F1	4	0.74
SL6-5	6	5	70	47	101	107	F1	4	0.79
SL6-6.5	6	6.5	151	35	94	100	F1/F2	6	1.05
SL6-7	6	7	151	35	94	100	F1/F2	6	1.10
SL6-7.5	6	7.5	151	35	94	100	F1/F2	6	1.18
SL6-10	6	10	151	50	94	100	F1/F2	6	1.55
SL6-10H	6	10	151	50	94	100	F1/F2	6	1.65
SL6-12	6	12	151	50	94	100	F1/F2	6	1.75
SL12-1.2	12	1.2	97	43	52	58	F1	2	0.53
SL12-2	12	2	178	35	61	67	F1	6	0.8
SL12-2.3	12	2.3	178	35	61	67	F1	6	0.9
SL12-2.3A	12	2.3	70	48	98	104	F1	/	0.71
SL12-2.6A	12	2.6	70	48	98	104	F1	/	0.75
SL12-2.9	12	2.9	79	56	99	105	F1	3	1.05
SL12-3.2	12	3.2	134	67	61	67	F1	2	1.21
SL12-4	12	4	90	70	101	107	F1/F2	6	1.36
SL12-4.5	12	4.5	90	70	101	107	F1/F2	6	1.43
SL12-5	12	5	90	70	101	107	F1/F2	6	1.53
SL12-6	12	6	151	65	94	100	F1/F2	1	1.86
SL12-6.5	12	6.5	151	65	94	100	F1/F2	1	1.98
SL12-7	12	7	151	65	94	100	F1/F2	1	2.07
SL12-7.2	12	7.2	151	65	94	100	F1/F2	1	2.15
SL12-7.5	12	7.5	151	65	94	100	F1/F2	1	2.25
SL12-8.5	12	8.5	151	65	94	100	F1/F2	1	2.37
SL12-9	12	9	151	65	94	100	F1/F2	1	2.48
SL12-10	12	10	151	98	95	101	F2/F1	1	2.80
SL12-10H	12	11	151	98	95	101	F2/F1	1	3.12
SL12-12	12	12	151	98	95	101	F2/F1	1	3.25
SL12-12H	12	13	151	98	95	101	F2/F1	1	3.45
SL12-15	12	15	181	77	167	167	F17/F18	3	4.6
SL12-17	12	17	181	77	167	167	F17/F18	3	5.1
SL12-18	12	18	181	77	167	167	F17/F18	3	5.25
SL12-20	12	20	181	77	167	167	F17/F18	3	5.5
SL12-24	12	24	175	166	125	125	F17/F18	3	7.6
SL12-26	12	26	175	166	125	125	F17/F18	3	7.8
SL12-28	12	28	175	166	125	125	F17/F18	3	8.2
SL12-24A	12	28	165	125	175	182/175	F18	3	8.1
SL12-28A	12	32	165	125	175	182/175	F18	3	9.3
SL24-3.5	24	3.5	185	73	70	70	/	/	2.1

Middle

MIDDLE SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics

+

· Valve Regulated design, no free liquid electrolyte, maintenance-free.

· Designed floating service life: 10 years at 25°C.

· Stable performance, good high performance for recycle use.

· Thickened Sn alloy plate and the grid with corrosion resistance.

· Wide operating temperature range : -20 to 50°C.

· Self-discharge rate:≤3% /month.

· Very good cycle performance: up to 500 cycles@50% DOD

· Excellent deep discharge recovery capability.

Middle

MIDDLE SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

Summary

Middle size batteries with 6V, 12V voltage, and larger capacity makes the batteries widely used in energy storage facilities and system.

Applications

Electric wheelchair

Ship equipment

Solar street light

- UPS/EPS systems
- Emergency systems
- Wheel Chairs
- Electric Powered Toys

- Medical Equipment
- Solar and Wind System
- Power Tools
- Control System

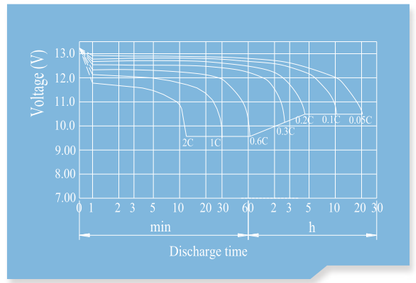
- Electric wheelchair
- Portable device
- Cable TV
- Electric scooter

Middle

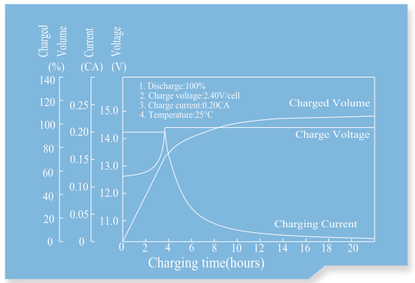
MIDDLE SIZE BATTERY SERIES

Valve Regulated Lead Acid Battery

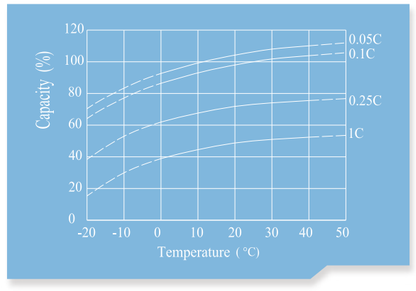
Experimental curve



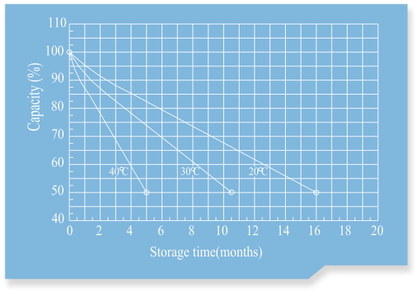
DISCHARGE CHARACTERISTICS(25℃)



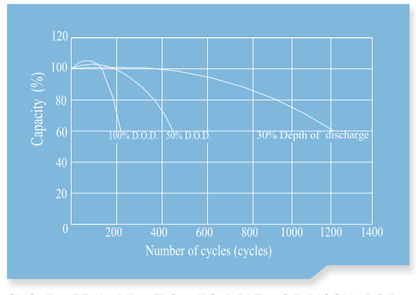
CHARGING CHARACTERISTICS(25℃)



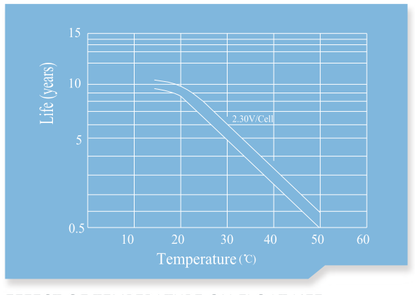
EFFECT OF TEMPERATURE ON CAPACITY



SELF DISCHARGE CHARACTERISTICS



CYCLE LIFE IN RELATION TO DEPTH OF DISCHARGE



EFFECT OF TEMPERATURE ON FLOAT LIFE

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SL6-36	6	36	162	88	164	170	F2	5	5.6
SL6-42	6	42	162	88	164	170	F2	5	6.1
SL6-100	6	100	194	170	205	210	F14	4	15.5
SL6-150	6	150	260	180	245	250	F13	5	23
SL6-300	6	300	295	178	345	348	F13	5	52
SL12-24L	12	24	195	130	155	166	F14	6	7
SL12-29	12	29	195	130	155	166	F14	6	9
SL12-31	12	31	195	130	155	166	F14	6	9.5
SL12-33	12	33	195	130	155	166	F14	6	10
SL12-35	12	35	195	130	155	166	F14	6	10.8
SL12-38	12	38	197	165	170	170	F19	3	12
SL12-40	12	40	197	165	170	170	F19	3	12.3
SL12-42	12	42	197	165	170	170	F19	3	13.3
SL12-45	12	45	197	165	170	170	F19	3	14
SL12-33S(55K)	12	33	229	138	211	214	F14	6	12.8
SL12-50	12	50	229	138	211	214	F14	6	15
SL12-55	12	55	229	138	211	214	F14	6	17
SL12-50A	12	50	229	138	205	210	F19	6	15.5
SL12-55A	12	55	260	168	211	214	F14	6	18.5
SL12-60	12	60	260	168	211	214	F14	6	19.8
SL12-70	12	70	260	168	211	214	F14	6	21
SL12-75	12	75	260	168	211	214	F14	6	22
SL12-80	12	80	260	168	211	214	F14	6	22.5
SL12-40S(65K)	12	40	350	167	179	179	F12	6	15.7
SL12-50S	12	50	350	167	179	179	F12	6	17
SL12-54	12	54	350	167	179	179	F12	6	17.8
SL12-60A	12	60	350	167	179	179	F12	6	19
SL12-65	12	65	350	167	179	179	F12	6	20
SL12-70A	12	70	350	167	179	179	F12	6	21
SL12-80A	12	80	350	167	179	179	F12	6	23.5
SL12-90V(90K)	12	70	306	169	211	214	F14	6	22.5
SL12-90E	12	90	306	169	211	214	F14	6	25.5
SL12-90	12	90	306	169	211	214	F14	6	26.5
SL12-70S(100K)	12	70	330	171	214	220	F12	6	24.3
SL12-80S	12	80	330	171	214	220	F12	6	25.5
SL12-90AE	12	90	330	171	214	220	F12	6	27
SL12-90A	12	90	330	171	214	220	F12	6	27.5
SL12-100E	12	100	330	171	214	220	F12	6	28.5
SL12-100	12	100	330	171	214	220	F12	6	29.5
SL12-110	12	110	330	171	214	220	F12	6	32
SL12-130	12	130	330	171	214	220	F12	6	32
SL12-120A	12	120	409	176	225	225	F12	6	34
SL12-90S	12	90	406	173	208	238	F12	6	29.5
SL12-100S	12	100	406	173	208	238	F12	6	31
SL12-110S(150K)	12	110	406	173	208	238	F12	6	32
SL12-120	12	120	406	173	208	238	F12	6	34
SL12-135	12	135	340	172	282	284	F12	6	40.5
SL12-135	12	135	340	172	282	284	F12	6	44
SL12-110S	12	110	485	172	240	240	F12	6	35
SL12-120S	12	120	485	172	240	240	F12	6	37.5
SL12-135S	12	135	485	172	240	240	F12	6	40.5
SL12-150	12	150	485	172	240	240	F12	6	43
SL12-150A(160K)	12	150	530	207	210	213	F12	2	47
SL12-160	12	160	530	207	210	213	F12	2	49.5
SL12-180	12	180	530	207	210	213	F12	2	52.5
SL12-150S(200K)	12	150	522	238	218	221	F12	2	51.5
SL12-180S	12	180	522	238	218	221	F12	2	55.5
SL12-190S	12	190	522	238	218	221	F12	2	57
SL12-200	12	200	522	238	218	221	F12	2	59.5
SL12-220	12	220	522	238	218	221	F12	2	62
SL12-225	12	225	522	238	218	221	F12	2	60.5
SL12-250	12	250	521	269	220	223	F12	2	71

Deep Cycle

DEEP CYCLE BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics +

· Longer life than regular AGM lead acid battery.

· Designed floating service life 12 years.

· Operating temperature range: -20 to 50°C.

· Longer life and higher stability for deep cycle use.

· Use Super-C additives lead plates: Deep discharge recovery capability.

· Cycle usage: 50% DOD, >650 cycles.

· Special grid alloy, excellent plate formula.

Summary

Special deep cycle technology offers battery widely used in wherever needs higher requirements of cycle times and service life.

Applications

- BTS Stations
- Medical Equipment
- Control System
- UPS systems
- Solar and Wind system
- Emergency systems

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SLD6-100	6	100	194	170	205	210	F14	4	15.5
SLD6-150	6	150	260	180	245	250	F13	5	23
SLD6-300	6	300	295	178	345	348	F13	5	52
SLD12-45	12	45	197	165	170	170	F19	3	14
SLD12-50	12	50	229	138	211	214	F14	6	15
SLD12-55	12	55	229	138	211	214	F14	6	17
SLD12-50A	12	50	229	138	205	210	F19	6	15.5
SLD12-55A	12	55	260	168	211	214	F14	6	18.5
SLD12-60	12	60	260	168	211	214	F14	6	19.8
SLD12-70	12	70	260	168	211	214	F14	6	21
SLD12-75	12	75	260	168	211	214	F14	6	22
SLD12-80	12	80	260	168	211	214	F14	6	22.5
SLD12-50S	12	50	350	167	179	179	F12	6	17
SLD12-60A	12	60	350	167	179	179	F12	6	19
SLD12-65	12	65	350	167	179	179	F12	6	20
SLD12-70A	12	70	350	167	179	179	F12	6	21
SLD12-80A	12	80	350	167	179	179	F12	6	23.5
SLD12-90	12	90	306	169	211	214	F14	6	26.5
SLD12-90A	12	90	330	171	214	220	F12	6	27.5
SLD12-100E	12	100	330	171	214	220	F12	6	28.5
SLD12-100	12	100	330	171	214	220	F12	6	29.5
SLD12-110	12	110	330	171	214	220	F12	6	32
SLD12-130	12	130	330	171	214	220	F12	6	32
SLD12-120A	12	120	409	176	225	225	F12	6	34
SLD12-90S	12	90	406	173	208	238	F12	6	29.5
SLD12-100S	12	100	406	173	208	238	F12	6	31
SLD12-110S	12	110	406	173	208	238	F12	6	32
SLD12-120	12	120	406	173	208	238	F12	6	34
SLD12-135	12	135	340	172	282	284	F12	6	40.5
SLD12-120S	12	120	485	172	240	240	F12	6	37.5
SLD12-135S	12	135	485	172	240	240	F12	6	40.5
SLD12-150	12	150	485	172	240	240	F12	6	43
SLD12-160	12	160	530	207	210	213	F12	2	49.5
SLD12-180	12	180	530	207	210	213	F12	2	52.5
SLD12-180S	12	180	522	238	218	221	F12	2	55.5
SLD12-190S	12	190	522	238	218	221	F12	2	57
SLD12-200	12	200	522	238	218	221	F12	2	59.5
SLD12-220	12	220	522	238	218	221	F12	2	62
SLD12-225	12	225	522	238	218	221	F12	2	60.5
SLD12-250	12	250	521	269	220	223	F12	2	71

GEL

GEL BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics

+

· Valve sealed design, no free electrolyte, Maintenance -free.
· Designed floating service life: 12 years(12V) at 25 °C.
· Wide operating temperature range from -20°C to 50°C.
· Low self-discharge rate: ≤3%/month.
· Excellent deep discharge cycle performance,
· Employing unique grid alloy, special gel formulation and distinct positive and negative lead paste ratio, the maintenance free battery boasts outstanding deep cycle service performance and over discharge recovery ability.
· More suitable for hot and high temperature environment.
· Completely manufactured from high purity lead raw materials （≥99.994%）, VRLA standard gel battery has extremely low self discharge.
· Gas recombination technology ensures excellent seal reaction efficiency, thus delivering no pollution such as acid mist to the environment.

Summary

The gel technology provides battery to be widely used even in extreme temperature and ventilated environment with less gas.

Applications

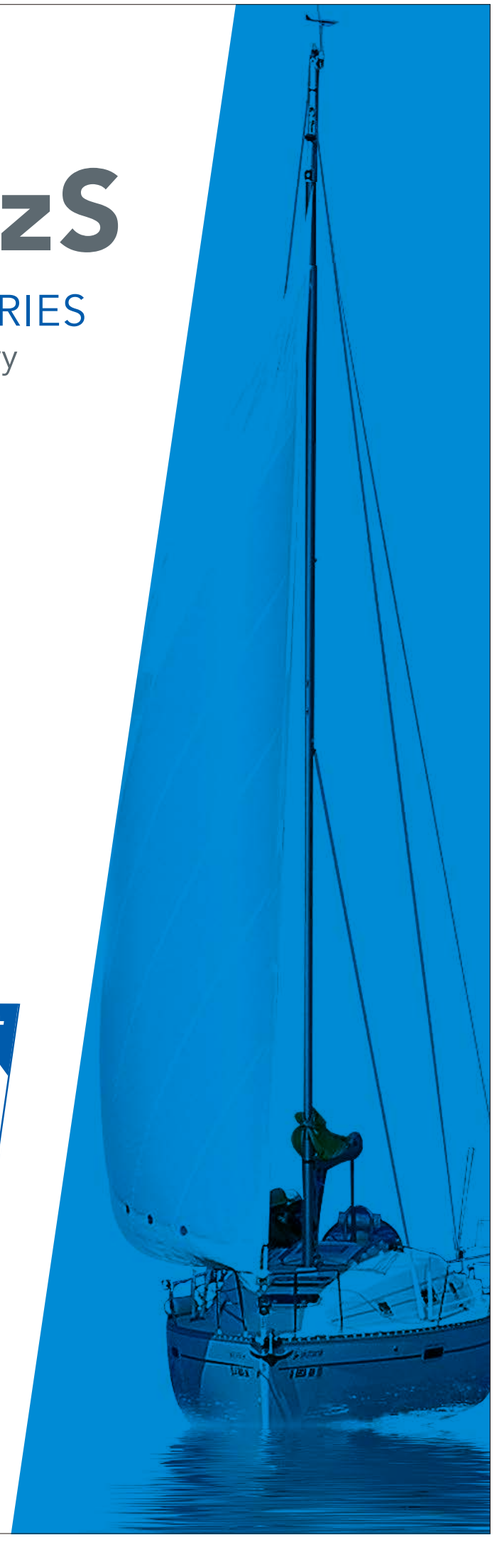
- UPS/EPS systems
- Wind system
- Solar system
- Renewable energy systems
- Energy storage projects
- Telecom systems
- Medical Equipment
- Control System
- Emergency systems

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SLG6-100	6	100	194	170	205	210	F14	4	15.5
SLG6-150	6	150	260	180	245	250	F13	5	23
SLG6-300	6	300	295	178	345	348	F13	5	52
SLG12-45	12	45	197	165	170	170	F19	3	14
SLG12-50	12	50	229	138	211	214	F14	6	15
SLG12-55	12	55	229	138	211	214	F14	6	17
SLG12-50A	12	50	229	138	205	210	F19	6	15.5
SLG12-55A	12	55	260	168	211	214	F14	6	18.5
SLG12-60	12	60	260	168	211	214	F14	6	19.8
SLG12-70	12	70	260	168	211	214	F14	6	21
SLG12-75	12	75	260	168	211	214	F14	6	22
SLG12-80	12	80	260	168	211	214	F14	6	22.5
SLG12-50S	12	50	350	167	179	179	F12	6	17
SLG12-60A	12	60	350	167	179	179	F12	6	19
SLG12-65	12	65	350	167	179	179	F12	6	20
SLG12-70A	12	70	350	167	179	179	F12	6	21
SLG12-80A	12	80	350	167	179	179	F12	6	23.5
SLG12-90	12	90	306	169	211	214	F14	6	26.5
SLG12-90A	12	90	330	171	214	220	F12	6	27.5
SLG12-100E	12	100	330	171	214	220	F12	6	28.5
SLG12-100	12	100	330	171	214	220	F12	6	29.5
SLG12-110	12	110	330	171	214	220	F12	6	32
SLG12-130	12	130	330	171	214	220	F12	6	32
SLG12-120A	12	120	409	176	225	225	F12	6	34
SLG12-90S	12	90	406	173	208	238	F12	6	29.5
SLG12-100S	12	100	406	173	208	238	F12	6	31
SLG12-110S	12	110	406	173	208	238	F12	6	32
SLG12-120	12	120	406	173	208	238	F12	6	34
SLG12-135	12	135	340	172	282	284	F12	6	40.5
SLG12-120S	12	120	485	172	240	240	F12	6	37.5
SLG12-135S	12	135	485	172	240	240	F12	6	40.5
SLG12-150	12	150	485	172	240	240	F12	6	43
SLG12-160	12	160	530	207	210	213	F12	2	49.5
SLG12-180	12	180	530	207	210	213	F12	2	52.5
SLG12-180S	12	180	522	238	218	221	F12	2	55.5
SLG12-190S	12	190	522	238	218	221	F12	2	57
SLG12-200	12	200	522	238	218	221	F12	2	59.5
SLG12-220	12	220	522	238	218	221	F12	2	62
SLG12-225	12	225	522	238	218	221	F12	2	60.5
SLG12-250	12	250	521	269	220	223	F12	2	71

OPzV/OPzS

OPzV / OPzS BATTERY SERIES

Valve Regulated Lead Acid Battery



Battery Characteristics

+

· Designed floating service life : 20 years at 25°C.

· Self-discharge rate:≤3% / month.

· Wide operating temperature range : -20 to 55°C.

· Tubular positive plate with prolonged cycle life.

· Higher corrosion resistance capability.

· Low self-discharge rate and long shelf life.

· Excellent deep discharge recovery capability.

· Very high operational reliability under rough operating conditions.

OPzV/OPzS

OPzV / OPzS BATTERY SERIES

Valve Regulated Lead Acid Battery

Summary

OPzV & OPzS are tubular structure batteries, Specially used in harsh environment and large scale project. It can provide the longest service life of battery.

Applications

- Security Systems
- Telecom
- Electric Utilities
- UPS/EPS systems
- Control Equipment
- Medical Equipment
- Renewable Energy System
- Energy storage projects
- Data center

Model	Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions(mm) (L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0	Terminal Type	Terminal Position	Weight (Kg)±5%
OPzV 200	2	200	0.9	103	206	355	390	F12	7	18.2
OPzV 250	2	250	0.85	124	206	355	390	F12	7	22.4
OPzV300	2	300	0. 8	145	206	355	390	F12	7	26. 4
OPzV350	2	350	0. 75	124	206	471	506	F12	7	29. 0
OPzV 420	2	420	0. 65	145	206	471	506	F12	7	35. 0
OPzV 500	2	500	0. 55	166	206	471	506	F12	7	39. 0
OPzV 600	2	600	0.45	145	206	646	681	F12	7	48. 0
OPzV 800	2	800	0. 35	191	210	646	681	F12	8	65. 0
OPzV 1000	2	1000	0. 3	233	210	646	681	F12	8	78. 5
OPzV 1200	2	1200	0. 25	275	210	646	681	F12	8	93. 0
OPzV 1500	2	1500	0. 22	275	210	796	831	F12	8	115
OPzV 2000	2	2000	0. 18	397	212	772	807	F12	12	155
OPzV 2500	2	2500	0. 15	487	212	772	807	F12	9	192
OPzV 3000	2	3000	0. 13	576	212	772	807	F12	9	228
OPzS 200	2	200	0.9	103	206	355	410	F12	7	17. 4
OPzS 250	2	250	0.8	124	206	355	410	F12	7	20. 5
OPzS 300	2	300	0.7	145	206	355	410	F12	7	24. 5
OPzS 350	2	350	0.65	124	206	471	526	F12	7	28. 0
OPzS 420	2	420	0.55	145	206	471	526	F12	7	32. 0
OPzS 490	2	490	0.5	166	206	471	526	F12	7	38. 0
OPzS 600	2	600	0.45	145	206	646	701	F12	7	47. 0
OPzS 800	2	800	0.3	191	210	646	701	F12	8	64. 0
OPzS 1000	2	1000	0.26	233	210	646	701	F12	8	78. 0
OPzS 1200	2	1200	0.22	275	210	646	701	F12	8	92. 0
OPzS 1500	2	1500	0.2	275	210	796	851	F12	8	113.8
OPzS 2000	2	2000	0.16	397	212	772	827	F12	12	152
OPzS 2500	2	2500	0.13	487	212	772	827	F12	9	185
OPzS 3000	2	3000	0.12	576	212	772	827	F12	9	222

2V

2V BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics

+

· Valve regulated design, no free liquid electrolyte, maintenance -free.

· Designed floating service life: 15 years (25°C).

· Operating temperature range: -20 to 50°C.

· Thicker plate design, long service life.

· Self-discharge rates ≤3% per month.

· Completely manufactured from high purity raw materials, has extremely low self discharge.

· Gas recombination technology ensures excellent seal reaction efficiency, thus delivering no pollution such as acid mist to the environment.

2V

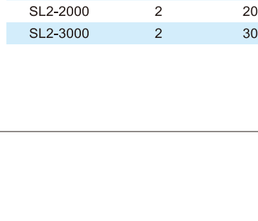
2V BATTERY SERIES

Valve Regulated Lead Acid Battery

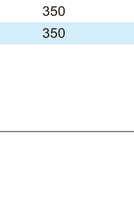
Summary

Capacity range of this series is 100Ah-3000Ah, and the long service life also makes the battery widely used in large scale projects.

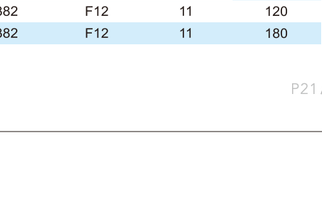
Applications



Power station



Traffic light system



Railway system

- Solar System
- Wind System
- Data centre
- Caravan
- Power station
- UPS and inverters
- Telecommunication equipment
- Emergency systems
- Electric power systems

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SL2-100	2	100	171	72	205	210	F13	7	5.6
SL2-160	2	160	171	111	330	364	F12	7	11
SL2-200	2	200	171	111	330	364	F12	7	12.4
SL2-250	2	250	171	111	330	364	F12	7	14
SL2-300	2	300	171	151	330	364	F12	7	18.2
SL2-400	2	400	210	175	330	367	F12	8	25
SL2-500	2	500	241	175	330	365	F12	8	30
SL2-600	2	600	302	175	330	367	F12	8	36
SL2-650	2	650	302	175	330	367	F12	8	37.5
SL2-800	2	800	410	175	330	367	F12	9	50
SL2-1000	2	1000	475	175	330	367	F12	9	60
SL2-1500	2	1500	400	350	345	382	F12	10	93
SL2-2000	2	2000	490	350	345	382	F12	11	120
SL2-3000	2	3000	710	350	345	382	F12	11	180

FRONT TERMINAL

FRONT TERMINAL BATTERY SERIES

Valve Regulated Lead Acid Battery

Battery Characteristics

+

- Sealed structure , no free liquid electrolyte, maintenance free.
- Designed floating service life: 12 years at 25°C
- Operating temperature range: -20 to 50°C
- Special lead paste formula improve the charging acceptance ability.
- Self-discharge rate≤3% /month.
- Narrow and long front terminal structure design
- Corrosion-resistant multi-element alloy plate
- Excellent security, compact structure
- Unified exhaust system with explosion-proof acid filter structure

FRONT TERMINAL

FRONT TERMINAL BATTERY SERIES

Valve Regulated Lead Acid Battery

Summary

Special shapes of battery shells (long and narrow) and front terminal make battery with easier way for installation and maintenance in telecommunications system.

Applications

Control equipments

Control center

Communication system

- Solar System
- Wind System
- Power system
- Data center
- Telecom power system
- UPS/EPS systems

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Terminal Position	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
SL12-50FT	12	50	277	106	221	221	F14	2	15.5
SL12-75FT	12	75	562	114	189	189	F14	2	24.5
SL12-100FT	12	100	506	110	224	239	F14	2	31
SL12-100AFT	12	100	395	110	286	286	F14	2	31
SL12-110FT	12	110	395	110	286	286	F14	2	33
SL12-120FT	12	120	551	110	239	239	F13	2	36
SL12-125FT	12	125	436	108	317	317	F13	2	37
SL12-150FT	12	150	551	110	287	287	F13	2	48.5
SL12-175FT	12	175	560	125	317	323	F13	2	53.8
SL12-180FT	12	180	560	125	317	323	F13	2	56
SL12-200FT	12	200	560	125	317	323	F13	2	57

ELECTRIC ROAD

ELECTRIC ROAD VEHICLE SERIES

Electric Road Vehicle Battery

Battery Characteristics

+

· Use lead carbon paste formula material,Apply with high density, special deep cycle,with longer life and better performance.

· Maintenance free, long life, large capacity, high and low temperature environment adaptability.

· The plate material is made of corrosion resistant, low gas production, excellent deep cycle life alloy.

· Adopt high strength ABS plastic shell and valve control seal structure design.

· Precision valve design, safe valve to ensure battery reaction gas to escape, and effective to control water loss of the battery.

· Special alloy formula, ensure the battery cycle life.

ELECTRIC ROAD

ELECTRIC ROAD VEHICLE SERIES

Electric Road Vehicle Battery

Summary

The utilisation of Lead carbon greatly improves the performance of charge and discharge,The battery gets longer service life.

Batteries are widely used in electric vehicles such as electric forklifts, golf carts, tour cars, sanitation trucks,etc. with high safety and reliability.

Applications

Golf Cart

- Sweeper
- Electric forklift

AGV

- Golf Cart
- Tour cars

Forklift power

- Sanitation vehicle
- Automatic guide vehicle

Model	Voltage	Capacity	Dimensions(mm)				Terminal Type	Colour	Weight
	(V)	(Ah)	(L)±2.0	(W)±2.0	(H)±2.0	(TH)±2.0			(Kg)±5%
6-EVF-48	12	48	220	138	212	215	Ø14	Gray	17
6-EVF-55	12	55	220	138	212	216	Ø14	Gray	19
6-EVF-70	12	70	260	169	213	218	Ø14	Gray	24
6-EVF-75	12	75	260	169	213	218	Ø14	Gray	24.5
6-EVF-80	12	80	260	169	213	218	Ø14	Gray	26.5
6-EVF-90	12	90	330	173	217	222	Ø20	Gray	31.5
6-EVF-100L	12	100	330	173	217	222	Ø20	Gray	33
6-EVF-100	12	105	330	173	217	222	Ø20	Gray	34
6-EVF-120	12	120	406	173	217	220	Ø20	Gray	42.6
6-EVF-150	12	150	485	170	240	240	Ø20	Gray	51.6
4-EVF-150	8	150	260	180	280	280	Ø20	Gray	36.2
4-EVF-170	8	170	330	180	221	221	Ø20	Gray	37.6
3-EVF-150	6	150	261	180	241	251	Ø18	Gray	28.5
3-EVF-170	6	170	261	180	241	251	Ø18	Gray	31.5
3-EVF-180	6	180	261	180	270	274	Ø20	Gray	33.5
3-EVF-200	6	200	261	180	270	274	Ø20	Gray	34.5
3-EVF-225	6	200	261	180	270	274	Ø20	Gray	36.2

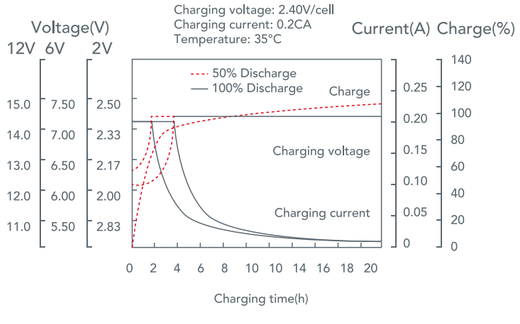
Charging
Characteristics /

- Floating charge voltage must be kept at a appropriate level to compensate self-discharge in batteries, which can keep the battery in a fully charged condition at all times. The optimum floating charge voltage for the battery is 2.25-2.30V per cell under normal temperature(25℃). When the electric power supply is not stable, the equalizing charge voltage for the battery is 2.40-2.50V per cell under normal temperature(25℃). But long time equalised charge should be avoided and less than 24 hours.
- The chart as below shows the charging characteristics at a constant current (0.1CA) and a constant voltage(2.23V/-cell) after discharge of 50% and 100% of the 10HR rated capacity. The time of fully charge varies by the discharge level, initial charge current and temperature. It will be recover 100% discharge capacity in 24 hours, if charging a fully discharging battery with constant current and constant voltage of 0.1CA and 2.23V respectively at 25℃. The initial charge current of battery is 0.1CA-0.3CA.
- For the VRLA storage battery, charging should be in constant voltage and constant current method.

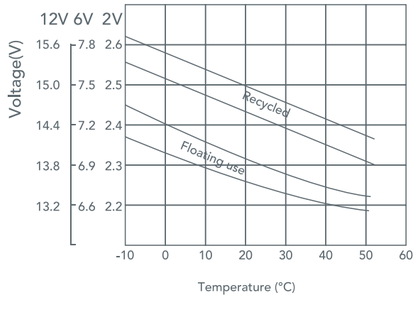
A: Charge of float battery
Charging voltage: 2.23-2.30V/cell (25°C) (suggest to set it at 2.25V/cell)
Max. Charging current: 0.3CA
Temperature compensation: -3mV/C.cell (25°C)

B: Charge of cycle battery
Charging voltage: 2.40~ 2.50V/cell (25°C) (suggest to set it at 2.45V/cell)
Max. Charging current: 0.3CA
Temperature compensation: -5mV/C.cell (25°C)

Charging characteristics curve as below:



The relationship between charging voltage and temperature:



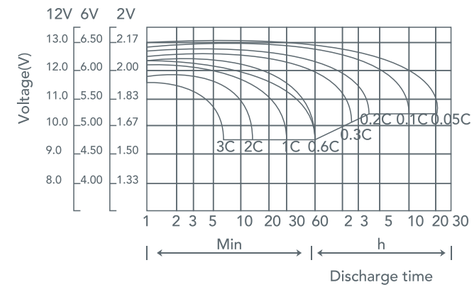
Discharge
Characteristics /

Discharge capacity

Right picture shows the curve:

Discharge capacity varies along with the change of discharge current(discharge rate), the smaller discharge current, the more the capacity increases; conversely, the larger the discharge current, the less the capacity.

Small size battery discharge curve:

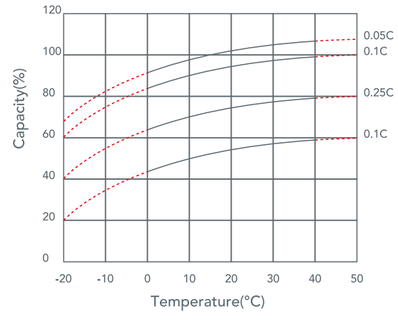


Temperature influences on capacity

Right picture shows the curve:

Discharge capacity increases as the temperature goes higher;

a lower temperature decreases the discharge capacity.



The relationship between the discharge current and the final voltage

In general, the final voltage is low in high current discharge, while in long time low current discharge, lead sulfate is formed on the electrode plates, which may cause distortion and shedding of active materials and bending of plates. So the final discharge voltage of small size battery should be sent higher to protect the battery.

Discharging a lead acid battery beyond the final discharge voltage (which is called over-discharged) must be avoided in practical applications. As above, over-discharged can only obtain very less additional capacity, but may damage the battery.

Recommended Discharge
Final Voltage Table As Below:

Discharge current	Discharge final voltage
< 0.1Ca	≥1.75V/cell
0.11~0.25Ca	≥1.70V/cell
0.26~1.0Ca	≥1.60V/cell
> 1.1Ca	≥1.40V/cell

Battery
Life /

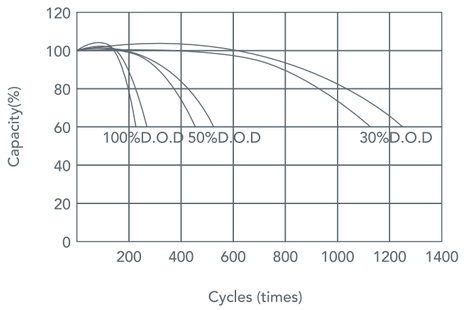
- The battery life of floating charge is influenced by discharge frequency, discharge depth, float charge voltage and service environment. The gas absorption mechanism described preciously can explain that the negative plates absorb the gas the generate in the battery and compound water at normal float charge voltage.Therefore, capacity will not decrease due to electrolyte depletion.

- Proper float charge voltage is necessary, because corrosion speed will be accelerated as the temperature rises that may shorter battery's life. Also the higher the charge current, the faster the corrosion. Therefore, the float charge voltage should always be set at 2.25V/cell, using a battery charger with voltage accuracy of 2% or better.

A Cycle life:

The cycle life of a battery depends on the depth of discharge(DOD), and the smaller the DOD, the longer the cycle life.

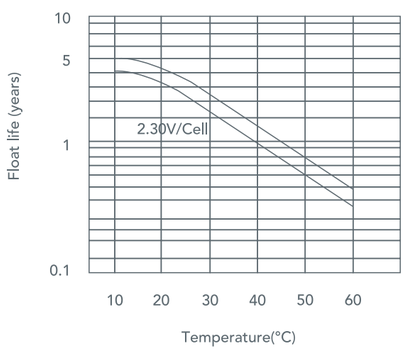
Cycle life curve as below:



B Standby life:

The float charge life is affected by temperature, and the higher the temperature , the shorter the float charge life. The design cycle life is based on 20°C.

Small size battery standby life curve as below:



Inspection&
Maintenance /

Storage:

The battery is delivered in a fully charged condition. Please note the points before installation as below:

A. Ignitable gases may be generated from the storage battery. Provide sufficient ventilation and keep the battery away from the sparks and naked flame.

B. Please check for any damage to the packages after arrival, then unpack carefully to avoid damage to the battery.

C. Unpacking at the installation location, please take out the battery by supporting the bottom instead of lifting the terminals. Attention that sealant may be disrupted if the battery is moved with force on the terminals.

D. After unpacking, check the quantity of the accessories and the exterior.

Inspection:

A. After verifying no abnormality in the battery, install it on the prescribed location (e.g. cubicle of battery stand)

B. If the battery is to be accommodated in a cubicle, place it at the lowest place of the cubicle whenever it is practicable. Keep at least 15mm distance between the batteries.

C. Always avoid installing the battery close to a heat source (such as a transformer)

D. Since s storage battery may generate ignitable gases, avoid installing close to an item that produces sparks (such as switch fuses).

E. Before making connections, polish the battery terminal to bright metal.

F. When a multiple number of the batteries are used, first connect the inner-battery in a correct manner, and then connect the battery to the charger or the load.

In these cases, the positive(+) of the storage battery should be securely connected to the positive(+) terminal of the charger or the load, and negative(-) to negative(-).

Damage to the charger may be caused by the incorrect connection between battery and charger. Make sure all connections are correct. The tightening torque for each connecting bolt and nut shall be in accordance with the below chart.

Applicable Bolts	Torque requirement
M5	2.0~4.0N*m(20~40kgf*cm)
M6	4.5~8.0N*m(45~80kgf*cm)
M8	11~13N*m(110~130kgf*cm)

Maintenance&
Operation /

▶ Cycle life

(1) The battery shouldn't be lower than the final discharge voltage.

(2) Please recharge the battery immediately if the battery is over discharging.

(3) The battery may be damaged if the discharge current is over 8C amps and the discharge time is more than 5 seconds.

▶ Charge

A.Float charge

Float charge voltage shall be maintained constant as the voltage.

The effect of too high or too low a floating charge voltage is as follows:

Too high for exceeded period(overcharge):it may shorten battery life.

Too low for exceeded period(undercharge): it may not meet load or cause variances in battery that will decrease the capacity of battery pack and shorten their life.

B.Recovery discharge

Recovery charge is achieve with the same voltage as floating charge , while initial charge current is 0.1C~0.3CA.

C.Temperature compensation

When the temperature deviates from 25℃, please modify the voltage as 3mv/cell for every 1℃ deviation.

D.The equalizing charge

The equalizing charge voltage is 2.3~2.35V/cell.

E.Caution during charge

(a) If the charge current exceeds 0.05CAat the final stage of charge, the battery may be permanently damaged in appearance and life. Pay special attention to charging voltage.

(b) The battery charger should be the one that can provide automatic constant voltage with drooping characteristics, if other types will be used, please contact us before applied.

▶ Storage

A.When you wish to store the battery, battery should be store without charger and load at dry location with low temperature.

B.If batteries are store for a long period, give a supplementary charge before use.

MAINTENANCE In order to prevent battery troubles, inspect the battery regularly in the following manner and keep records. ▼

Monthly check			
What to inspect	Method	Stand spec	Measures in case of irregularity
Total battery voltage during float charge	Measure total voltage by voltmeter	Float charge voltage* number of batteries	Adjusted to the float charge voltage number of batteries
Half year check			
Total battery voltage during float charge	Measure total battery voltage by voltmeter of class 0.5 or better	Total battery voltage shall be product of float charge voltage with battery quanting	Adjust if the voltage value is outside standard
Individual battery voltage during float charge	Measure total battery voltage by voltmeter of class 0.5 or better	Within 2.25±0.1V/cell	Contact us for remedy; Any battery showing errors greater than permissible value shall be repaired or replaced
Appearance	Check for damage or leakage at container and cover	Replaced by electric tank or roof without damage or leakage acid	If leakage is found verify the cause, for container and cover having cracks, the battery shall be replaced
	Check for contamination by dust, etc	Battery no dust pollution	If contaminated, clean with wet cloth.
	Check for rust in the cubicle, battery stand, connecting plates, connecting wires and terminals	Battery holder Plate Connecting cable Termination rust	Perform cleaning, rust preventive treatment, painting of touch up.
One-year inspection (following inspection shall be added to six-months inspection)			
Connecting parts	Tighten bolts and nuts	Checking (connecting screw stud books and torque)	

▶ Cautions

A. Do not use vacuum cleaner and dry cloth(especially chemical fiber) but damp cloth to clean the battery, in order not to cause any static electricity and danger. Keep the battery away from organic solvents, such as gasoline.

B. A storage battery may generate ignitable gases, avoid placing near a naked flame or short-circuiting the battery.

C. Do not attempt to dismantle the storage battery. If sulfuric acid splashes on skin or clothes due to mechanical damage, rinse immediately with water, If splashed into the eyes wash with a large amount of fresh water and get treatment immediate.

D. It is very dangerous to throw battery into fire, avoid such conduct at all times.

E. A ventilation opening is required when the storage battery is operated in a cubicle or case containing the battery should be provided with sufficient ventilation.

F. One may get electric shock if touch an electrical conductor, Be sure to wear rubber gloves before inspection or maintenance work.

G. Please take rust proof conduction on the battery connectors.

H. Theoretically operating temperature is -20 - 50℃, but operating under 15 - 25℃ is recommended for longer service life.

I. Please contact us before using 4 or more batteries in parallel.

J. Mixed use of batteries with different capacities, different histories and of different manufacturer is liable to cause damage to the battery or the equipment,consult with us if such necessity is present.