

Sealed Lead Acid
Industrial Battery
Products Manual

www.efirstpower.com

FirstPower®

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Contents

Company Profile	4
Company Construction	7
Quality Control	9
Researching and Development	10
Company History	11
VRLA(AGM) Battery	12
1. Features of FirstPower Battery	12
2. Applications	13
3. General Characteristics	14
4. Battery Capacity Selection	19
Standard Battery Series	
FP Type	20
LFP Type	22
CFP Type	23
Deep Cycle Battery Series	24
Long Life Battery Series	24
High Rate Discharge Battery Series	25
High Temperature Battery Series	25
Gel Battery(Gelled Electrolyte)	26
CFPV & LFPV (OPzV)Battery	29
CFPS & LFPS (OPzS)Battery	31
Motorcycle Battery	33
Traction Battery	35
Battery Terminals and Position	38
Handling Precautions	39



FirstPower Huizhou Plant



FirstPower Shaoguan Plant



FirstPower Yixing Plant

FirstPower®

*The Best Manufacturer
of Rechargeable Battery
You Shall Trust*

Company Profile

FirstPower Technology Co., Ltd. was set up as a manufacturer of rechargeable batteries in 1993 and now has three plants (one in Yixing city, one in Xiaoguan city and the other in Huizhou city), with total manufacturing facilities of around 80,000 square meters. FirstPower generated, with a group of highly qualified staff in the rechargeable battery industry in China and overseas, from a good demand for quality batteries. It has enjoying a sound reputation for proven quality batteries for the last 15 years. Now we can produce 9 series batteries to meet different applications.

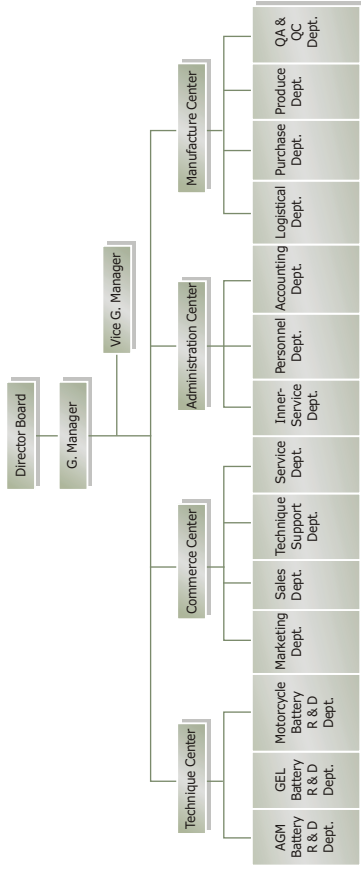
FirstPower brings you not only reliable battery and technology, but also excellent services and real value you shall expect and enjoy.

Compared with most other Chinese battery manufacturers, FirstPower can really supply customers with reliable batteries for various applications. Further we have a strong capability to work together excellently with our customers, so that our batteries are compatible with global standards of JISC8702 (2009), BS6290-4, DIN (IEEEE1188), IEC60896-2, IEC60896-1,etc.

We welcome orders with "FirstPower" brand; We are also flexible to accept orders on OEM basis. Contact us now! Your partnership with FirstPower will prove worthy of it.

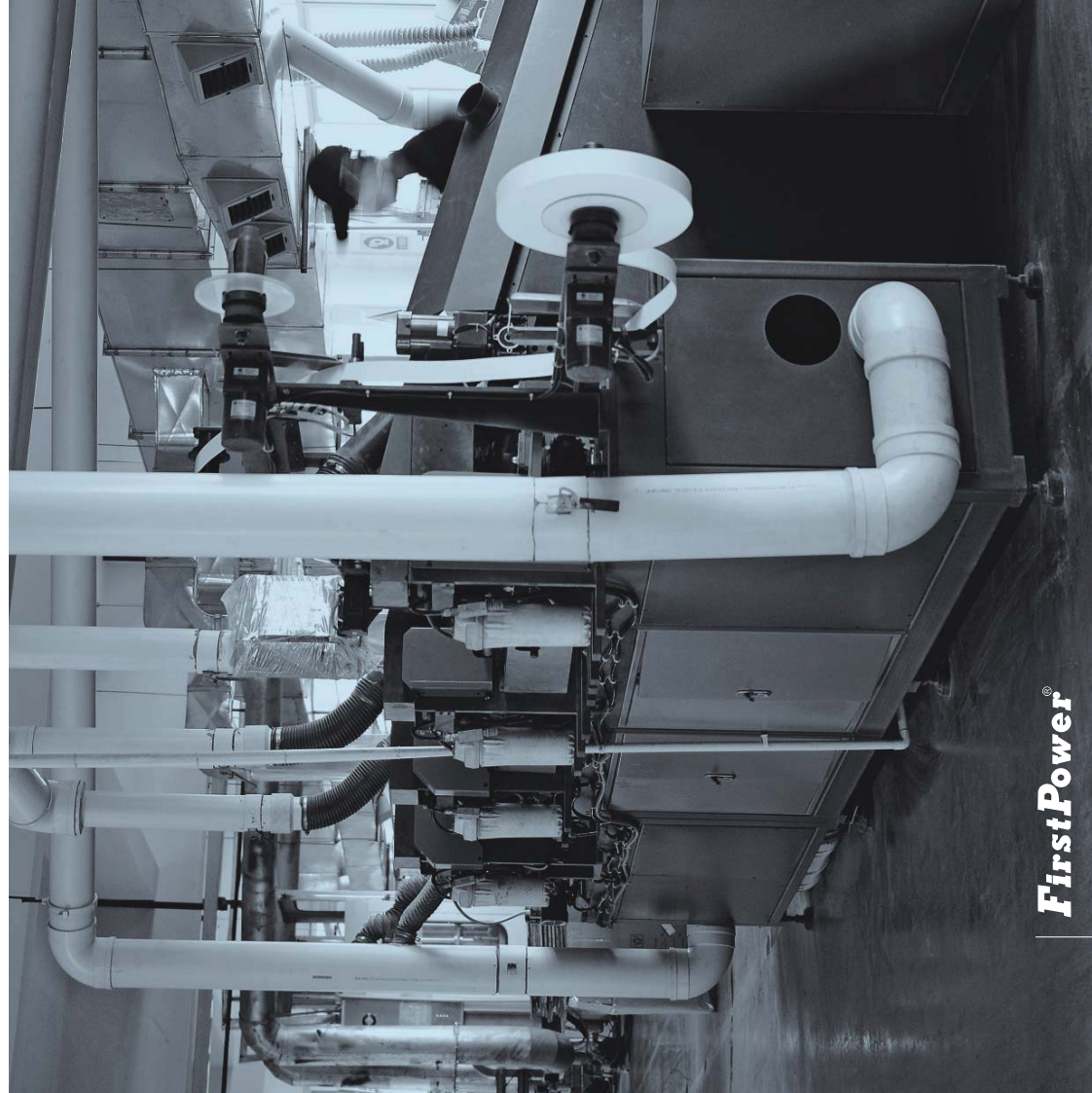
International certifications:
 ISO9001 approval, FN: Q3105105131
 ISO14001 CTC04912E10302ROM
 OHS MS18001.04912S10150ROM
 UL approval, FN:MH28204
 CE approval, FN:G2M20201-0102-E-16
 KS approval, FN: KS C 8519
 VDS approval
 BS approval

Company Construction



Our Strength

- Consistent quality performance that exceed customer expectations
- Strong R & D competence to design special model
- Excellent customer service
- Proactive response including time to product, time to market, and time to volume
- Continuous process improvement to drive cost competitiveness and quality performance



FirstPower®

Mission Statement

To be one of the best rechargeable battery suppliers in the world by means of innovating in technology and management continuously.

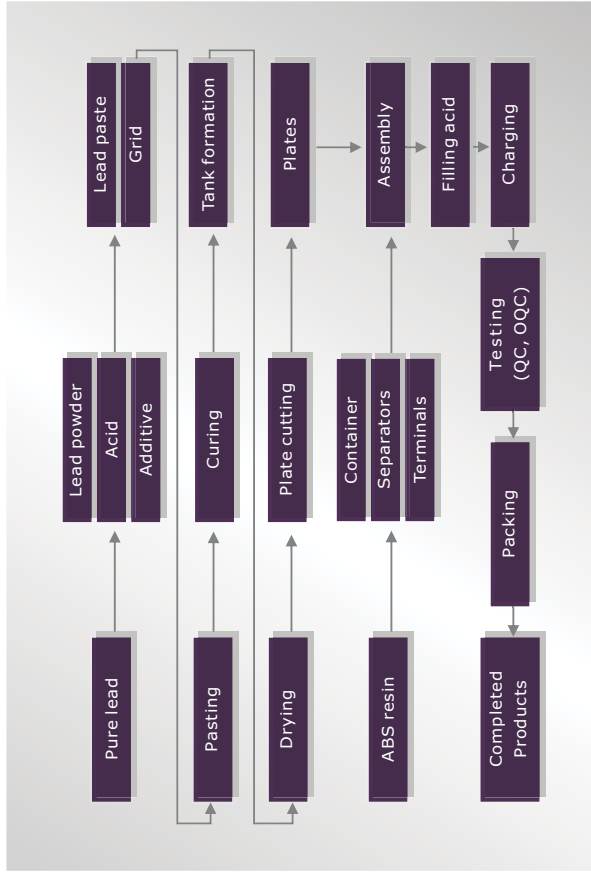


FirstPower

Quality Policy

*Technology as the Cornerstone
Quality Assurance,
Customers First*

Production Process of Firstpower Batteries



Quality Control

Firstpower applies the most advanced equipments and continual improved artworks to organize the production process. The QC department consists of IQC, IPQC, QA, QE, OQC, laboratory and testing subsidiaries which strictly meets ISO9001 quality system requirements from in-house material to batteries out warehouse to make sure the products are under the strict audit in the whole process.

The defective rate is below 0.1%. Meanwhile, Firstpower take analytical pure material to make sure the batteries with high quality, long life, low self discharge advantages.





FirstPower®

Researching & Development

Firstpower cooperates with Harbin institute of technology and Fudan University which are leading universities about electrochemistry in China to set up the R&D center.

The engineers of R & D department have worked in electrochemistry area since 1990. The supervisors of QC and production departments are all with sufficient experience in VRLA battery industrial over 25 years. The best NPD cycle time is 6 weeks. Firstpower can present the qualified samples in 45 days.



Company History

History Proved Quality

..... Quality Ensure Future

2014 Joint venture with PT TRI MEGA BATERINDO-Indonesia.

2013 Acquired ISO14001 CTC04912E10302ROM
OHS MS18001 04912S10150ROMcertification

2011 Set up a joint venture factory in Malaysia.
Acquired ISO9001-2008 international quality system certification.

2010 New factory of huizhou(52,000m²) was set up.

2008 With more than 1500 employees, 80,000 m² plant, exporting to more than 40 countries including America, Germany, Japan, Italy, United Kingdom, Australia, Russia, Spain, Turkey, Brazil, Korea, India, Singapore, Malaysia, Thailand, Nigeria, Venezuela, Zimbabwe etc., and sales turnover is 90 million USD.

2006 Set up ourselves plates plant in Shaoguan Guangdong province.
Acquired VDS certification.

2004 The qualified supplier approved by LG (Korean).
The qualified supplier approved by SAMSUNG (Korean) .

2003 Acquired KS certification
Set up a plant to produce motor cycle and electric bike battery in Jiangsu.

2001 Acquired ISO9001-2000 international quality system certification.

2000 Acquired the certification of Ministry of electric power industry China.
Established Chinese-Korean joint venture company (with VOLTA TECH. Co., LTD KOREAN).

1999 Set up overseas sales branches in Asia Europe America.
Acquired the certification of Ministry of information industry China.

1998 Acquired UL and CE certification.

1997 Acquired ISO9001-1994 international quality system certification.

1996 Acquired the testing certification of Battery quality supervision and inspection China.
Set up sales and service networks around China.

1995 Introduced into international advanced technology and equipment to produce battery in Shenzhen China.

1993 Established FirstPower Technology Co; Ltd. R&D center in Shenzhen China.



FirstPower VRLA(AGM) Battery

1 Features of FirstPower VRLA(AGM) Battery

1.1 Nonpillable

The FirstPower VRLA battery uses an absorbed electrolyte system. All of the electrolyte is absorbed into the positive plates, negative plates, and the separators. Coupled with the use of special sealing epoxies, and long sealing paths for posts, FirstPower VRLA batteries have exceptional leak resistance, and can be used in any position.

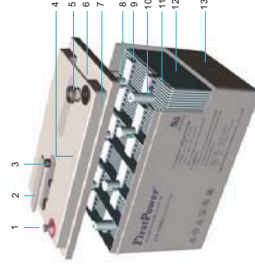
1.2 Sealed and Maintenance-free Operation

There is no corrosive gas generation during normal use and no need to check the specific gravity of the electrolyte or to add water during the service life.

1.3 High Quality and High Reliability

The FirstPower VRLA battery has stable and reliable capacity. The battery can withstand overcharge, over discharge, vibration, and shock. To assure this high quality and reliability, the batteries are 100% tested on production line for voltage, capacity, seals and the safety valve are 100% visually inspected before the final assembly process.

Battery Construction



1. Terminal
2. Top cover
3. Valve
4. Data Code
5. Pillar Seal
6. Handle
7. Cover
8. Post
9. Positive Plate
10. Pillar
11. Separator
12. Negative Plate
13. Container

1.4 Exceptional Deep Discharge Recovery

FirstPower batteries have exceptional deep discharge recovery and charge acceptance, even after deep or prolonged discharge.

1.5 Low Self-discharge

Because of the use of lead calcium grids alloy and highly purity materials, FirstPower VRLA battery can be stored long periods of time without recharge. The rate of FirstPower VRLA battery self-discharge on open circuit is less than 2% per month at 20°C/68°F to 25°C/77°F.

1.6 Long Service Life

The FirstPower VRLA battery has long life in standby or cyclic service.

1.7 Solid Copper Terminals

Ensures highest current carrying capability.

1.8 Computer-aided Design and Manufacturing

Ensures quality products through control of processes and standards.

1.9 UL and CE Recognized.

UL approval, file No. MH28204
CE approval, file No. G2M20201-0102-E-16

2 Applications

- Telecommunication equipments
- Electronic instruments
- Alarm and security systems
- Emergency lighting
- Cable Television
- Computers
- Electronic cash registers
- Geophysical equipment
- Marine equipment
- Medical equipments
- Power tools
- Toys
- Portable cine and video lights
- Solar power systems
- Wind power systems
- Television and video recorders
- Vending machine
- Uninterruptible power supplies



3 General Characteristics

3.1 Discharging

3.1.1 Final Discharging Voltage

The final discharging voltage is the battery terminal voltage in close circuit voltage per cell to which a battery discharging safely and maximize battery life. The higher discharging current is, the lower final discharging voltage of battery should be .

Discharging Current	Final Discharging Voltage (vpc)
Up to 0.1CA	1.75
0.11~0.17CA	1.70
0.18~0.25CA	1.67
0.26~1CA	1.60
Above 1.1CA	1.30

3.1.2 Battery Discharging Characteristics:

The discharging capacity of battery depends on the discharge rate being used and ambient temperature.

Figure 1, 2 and 3 show the different discharging current corresponding to discharging capacity at 20 °C(68°F) to 25°C(77°F) for FP, LFP and CFP types batteries. They show that the rated capacity of a battery is reduced when it is discharged at a value of current that exceeds its 10-hours or 20-hours rate.

3.1.3 Temperature Effects in Relation to Battery Capacity.

At a higher temperature, the capacity of battery increases and conversely at a lower temperature, the capacity of battery decreases. Figure 4 shows the effects of different temperature in relation to battery capacity.

Can calculate the batteries' rated capacity as following formula if the ambient temperature of tested battery is not 20°C-25°C(68°F-77°F).

$$C = \frac{Ct}{1+k(t-25)}$$

Note: C: rated capacity

Ct: the tested capacity on t

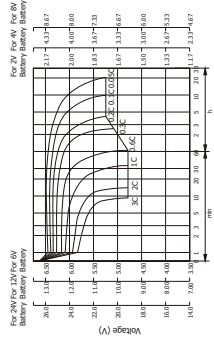


Figure 1: Discharge Characteristics Typically for FP Type

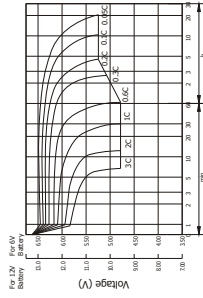


Figure 2: Discharge Characteristics Typically for LFP Type

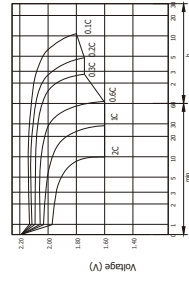


Figure 3: Discharge Characteristics Typically for CFP Type

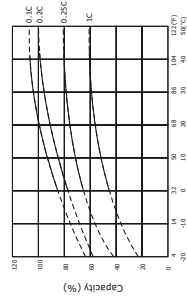


Figure 4: Effect of Temperature and Discharge Rate on Available Capacity

- t: the ambient temperature of the tested battery
- k: the coefficient of temperature. It will be increased if the discharge current increased.
k=0.006 20 hours and 10 hours rated capacity testing,
k=0.01 3 hours and 1 hours rated capacity testing.

3.2 Charging

3.2.1 Charging Methods

Correct charging is one of the most important factors to consider when using valve regulated lead acid batteries. Battery performance and service life will be directly affected by the charging methods.

There are four major methods of charging.

- Constant voltage charging.
- Constant current charging.

Two stages constant voltage charging. Taper current charging.

3.2.1.1 Constant Voltage Charging

This is the recommended method of charging for VRLA batteries. It is necessary to closely control the actual voltage to ensure that it is with the limits advised.

Standby service:

2.23~2.30 vpc at 20°C(68°F) to 25°C(77°F)

Cycle service:

2.40~2.50 vpc at 20°C(68°F) to 25°C(77°F)

It is suggested that the initial current be set within 0.4CAmps. Figure 5 and 6 indicate the time taken to fully recharge the battery. It is also seen that the charging current is decreased to approx 0.5-4mA/Ah under charging voltage 2.30 vpc, and 3-10mA/Ah under charging voltage 2.40vpc when the battery is fully charged at 20°C(68°F) to 25°C(77°F).

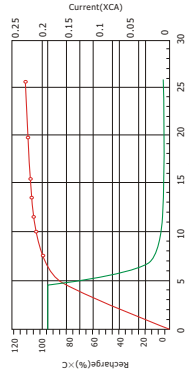


Figure 5: Charge 0.2C AMP Limit>3.0V/C Following Full Discharge

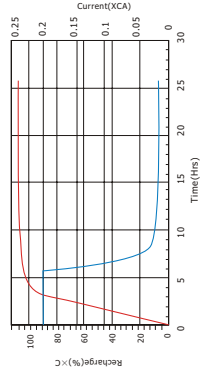


Figure 6: Charge 0.2C AMP Limit>4.0V/C Following Full Discharge

Note: it is necessary to ensure that the voltage is correctly set. The charging voltage set too high will increase the corrosion of the positive plates causing loss of capacity and ultimately shortening the life of the battery.

3.2.1.2 Constant Current Charging

This method of charging is generally not recommended for VRLA batteries. It is necessary to understand that if the batteries are not removed from the charger as soon as possible after reaching a state of full charge. Considerable damage will occur to the batteries due to over charging. The required recharged capacity is 1.07 to 1.15 times as discharged capacity.

3.2.1.3 Two Stages Constant Voltage Charging

This method should not be used where the battery and load are connected in parallel, however, if this method is to be used, it is suggested that the FirstPower technical department be contacted.

3.2.1.4 Taper Current Charging

This method is not recommended for VRLA batteries, however, if this method is to be used it is suggested that the First Power technical department be contacted.

3.2.2 Effect of Temperature on Charging Voltage

As temperature rises, electrochemical activity in the battery increases. Similarly, as temperature falls, electrochemical activity decreases. Therefore, as temperature rises, charging voltage should be reduced to prevent overcharge, as temperature falls, charging voltage should be increased to avoid undercharge. In general, to assure optimum service life, use of a temperature compensated charger is recommended. The recommended compensation factor for FirstPower VRLA batteries is $\pm 3\text{mV}/^{\circ}\text{C}$ Cell (standby use) and $\pm 4\text{mV}/^{\circ}\text{C}$ cell (cyclic use). The standard central point for temperature compensation is $20^{\circ}\text{C}/68^{\circ}\text{F}$. Figure 7 shows the relationship between temperatures and charging voltages in both cyclic and standby applications.

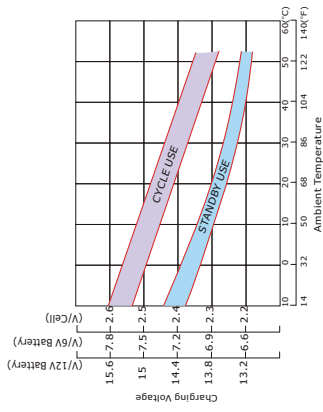


Figure 7: Relationship Between Charging Voltage and Temperature

3.2.3 Charging Time

The time required to complete each charge depends on the discharge condition of battery, characteristics of charge used, or the temperature during charge. For cyclic use, using constant voltage charging, this time can be estimated by the following expression at $25^{\circ}\text{C}/77^{\circ}\text{F}$.

(1) Discharge current: Larger than 0.25CA

$$T_{ch} = Cdis/I + 3 \sim 5$$

(2) Discharge current: Less than 0.25CA

$$T_{ch} = Cdis/I + 6 \sim 10$$

Tch: time required for charge (hours)
 Cdis: ampere-hour discharged before charge started (Ah)
 I: initial charging current (A).

Complete charge time for float service will be slightly more than 24 hours.

Note: The minimum recharge capacity should be 1.02 ~ 1.05 times of discharge capacity

3.3. Battery Life

Battery life depends on a number of key factors. These include: Operating temperature of the battery; Method of charging utilized; Actual use of the product i.e.: standby or cycle service etc.

3.3.1 Cyclic Life

Giving due consideration to the above factors, the actual life of a battery in cycle service is dependent on the depth of discharge of each cycle. The greater the depth of discharge of each cycle, the less the number of cycles available from the battery.

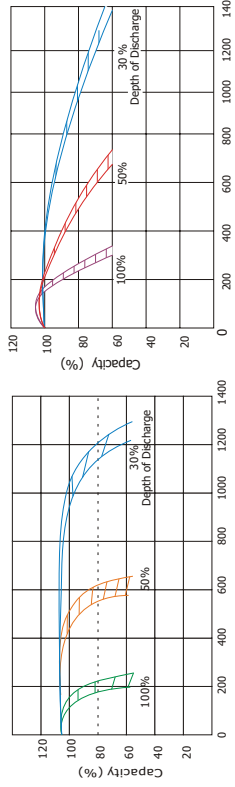


Figure 8: Cycle Life Vs Depth of Discharge For Standard Series FP, LFP, Long Life, CPP Types

3.3.2 Standby Life

The estimated life under float service of FP type is 10 years at $20^{\circ}\text{C}/68^{\circ}\text{F}$; LFP type is 12 years at $20^{\circ}\text{C}/68^{\circ}\text{F}$; CPP type is more than 20 years at $20^{\circ}\text{C}/68^{\circ}\text{F}$. The float service life affected by the factors listed above and the number of discharging, the depth of discharging the battery suffers during its life time. The more discharges suffered and the deeper the discharges, the shorter the battery life. The higher the temperature, the shorter the battery life. If the battery temperature remains at an elevated level for an extended period of time, the expected life is reduced by 50% for each 8 to 10°C of constant temperature above $20^{\circ}\text{C}/68^{\circ}\text{F}$.

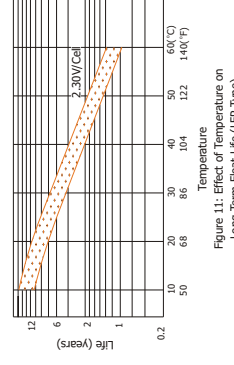


Figure 11: Effect of Temperature on Long Term Float Life (LFP Type)

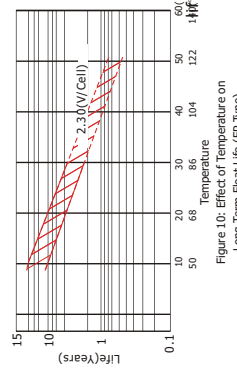


Figure 10: Effect of Temperature on Long Term Float Life (FP Type)

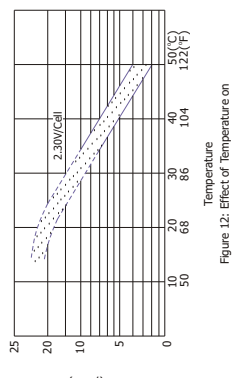


Figure 12: Effect of Temperature on Long Term Float Life (CPP Type)

3.4. Battery Storage

3.4.1 General Storage Conditions:

The battery should be stored under the following conditions.

- (1) Low humidity
- (2) 5 to 122°F(-15 to 50°C)
- (3) Clean, and avoid direct sunlight.

3.4.2 Capacity after Long Term Storage

After long term storage, all batteries deliver less than rated capacity on first cycle. In cyclic application, full capacity may be obtained through several charge/discharge cycles, typically 2-3 cycles.

3.4.3 Refresh Charge

When batteries are placed in extended storage, it is recommended that they receive a refresh charge at recommended intervals as following:

Storage Ambient	Recommended Interval
Below 20 °C(68°F):	12 months
20 to 30°C(68 to 86°F):	6 months
30 to 40°C(86 to 104°F):	3 months

Refresh charging method:

3 to 5 hours of constant current 0.1C Amps or 12 to 16 hours at constant voltage of 2.45V/cell

3.4.4 "Self Life"- typical capacity vs. time

Self-discharge rate is very much dependent on the storage temperature as shown in Figure 13. Lower temperatures allow the battery to be stored for longer periods. (Each ten degree centigrade drop results in a halving of self-discharge rate and doubles storage time.)

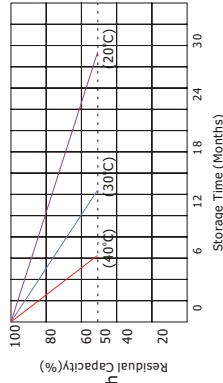


Figure 13: Self Life vs Storage Temperature

3.4.5 "Self Life"-storage time vs. temperature

Figure 14 shows the time for the capacity to decrease to 50% of nominal capacity at each temperature during storage. If the storage temperature is known, the graph may be used for finding the most useful recommended refresh charge intervals.

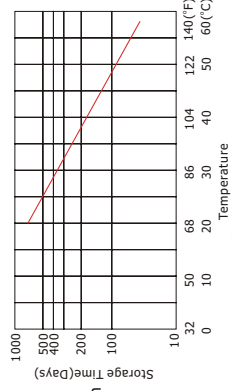


Figure 14: Self Life-Storage Time Temperature

3.4.6 Open Circuit Voltage and Residual Capacity

Residual capacity can be estimated by measuring the open circuit voltage as shown in Figure 15.

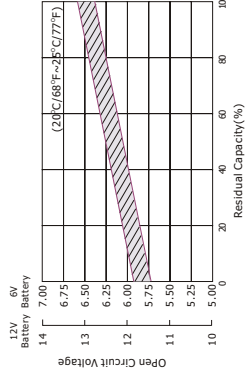


Figure 15: Open Circuit Voltage vs Residual Capacity

3.5 Battery Internal Resistance

The internal resistance of a battery is lowest when the battery is in a fully charged state. The battery internal resistance will be increased gradually during discharge.

Figure 16 shows the changing of internal resistance of FP1272(12V7.2Ah) battery during different rated discharging.

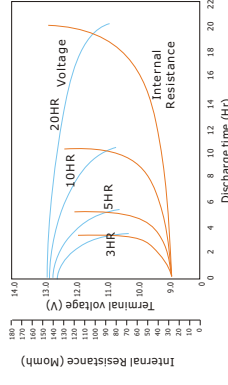


Figure 16: Internal resistance VS discharging

4 Battery Capacity Selection

The individual battery model specification sheet(www.efirstpower.com) can be used to determine the minimum battery size, express in ampere hours of capacity if know the discharging current(power) and the discharging time. The battery life(cycle service life or floating service life) should be considered for final battery capacity selection.

Standard Battery Series: FP Type

Voltage: 2V, 4V, 6V, 8V, 12V, 18V, 24V, 36V Capacity: 0.3AH to 28AH
 Designed floating service life : 10 Years at 20°C/68°F to 25°C/77°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg					
FP203	2	0.3	80	17.5	0.69	68	2.68	Tab		0.02					
FP205	2	0.5	60	17.5	0.69	68	2.68	Tab		0.03					
FP245	2	4.5	6	46	1.81	25	3.94	T1	G	0.27					
FP250	2	5	4	46	1.81	25	3.94	T1	G	0.30					
FP260	2	6	6	51	2.01	33	4.13	T1	G	0.34					
FP270	2	7	5	51	2.01	33	4.13	T1	G	0.38					
FP2150	2	15	3.5	70	2.76	47	1.85	101	3.98	107	4.21	T1	A	0.80	
FP405	4	0.4	130	39	1.54	14	0.55	50	1.97	50	71	2.8	Tab	E	0.10
FP408	4	0.8	110	35	1.38	22	0.87	64	2.52	71	2.8	Tab	E	0.10	
FP420	4	2	27	45	1.77	33.5	1.32	75	2.95	81	3.19	T1	C	0.28	
FP430	4	3	18	66	2.6	33.5	1.32	75	2.95	81	3.19	T1	C	0.38	
FP432	4	3.2	14	90	3.54	34	1.34	60	2.36	66	2.6	T1	C	0.42	
FP434	4	3.4	13	90	3.54	34	1.34	60	2.36	66	2.6	T1	C	0.44	
FP440	4	3.3	25	32	1.26	32	1.26	135	5.31	148	5.75	T1	C	0.35	
FP445	4	4.5	17	48	1.89	48	1.89	102	4.02	108	4.25	T1	D	0.50	
FP445A	4	4.5	15	48	1.89	52	2.05	94	3.7	99	3.9	T1	C	0.55	
FP4100	4	10	8	102	4.02	44	1.73	95	3.74	101	3.98	T2/T1	C	1.05	
FP4200	4	20	4.5	149	5.87	43	1.69	154	6.06	165	6.5	T3	D	2.22	
FP605	6	0.4	150	57	2.24	14	0.55	51	2.01	51	2.01	plug	G	0.10	
FP610	6	1	60	61	2.24	14	0.55	51	2.01	57	2.24	T1	A	0.25	
FP612	6	1.2	52	97	3.82	24	0.94	52	2.05	58	2.28	T1	C	0.28	
FP623	6	2	25	43	1.69	37	1.46	76	2.89	76	2.89	Tab	L	0.34	
FP628	6	2.8	32	66	2.6	33	1.3	97	3.82	104	4.09	T1	A	0.49	
FP628A	6	2.8	32	66	2.6	33	1.3	100	3.94	106	4.17	T1	A/C	0.49	
FP632	6	3.2	28	134	5.28	35	1.38	61	2.4	67	2.64	T1	C	0.64	
FP634	6	3.4	25	134	5.28	35	1.38	61	2.4	67	2.64	T1	C	0.64	
FP632A	6	3.2	28	125	4.92	33	1.3	61	2.4	67	2.64	T1	A/C	0.61	
FP632B	6	3.2	28	125	4.92	33	1.3	61	2.4	67	2.64	T1	A/C	0.61	
FP635	6	3.5	18	194	7.64	25	0.98	50	1.97	56	2.2	T1	C	0.80	
FP640	6	4	30	70	2.76	47	1.85	101	3.98	107	4.21	T1	A	0.72	
FR645	6	4.5	25	70	2.76	47	1.85	101	3.98	107	4.21	T1	A	0.80	
FP650	6	5	15	151	5.94	34	1.34	94	3.7	100	3.94	T1/T2	C	1.15	
FP660	6	6	12	170	6.69	35	1.38	70	2.76	2.99	T1	C	0.88		
FP640A	6	4	30	70	2.76	47	1.85	101	3.98	106	4.17	Tab	A	0.70	
FP640B	6	4	30	70	2.76	47	1.85	101	3.98	106	4.17	Tab	A	0.73	
FP645B	6	4.5	25	70	2.76	47	1.85	102.5	4.04	103	4.06	T1	A	0.73	
FP640K	6	4	30	70	2.76	47	1.85	98	3.86	104	4.09	T1	A	0.70	
FP645K	6	4.5	25	70	2.76	47	1.85	98	3.86	104	4.09	T1	A	0.73	
FP640WA	6	3.6	55	39	1.54	39	1.54	150	5.91	150	5.91	plug	---	0.82	
FP640WB	6	4	50	194	7.64	25	0.98	62	2.44	62	2.44	plug	---	0.69	
FP649	6	4.9	40	242	9.53	35	1.38	47	1.85	47	1.85	plug	N	0.85	
FP650A	6	5	21	170	6.69	35	1.38	70	2.76	2.99	T1	C	0.88		
FP660S	6	6	18	85	3.35	48	1.89	100	3.94	106	4.17	T1	A	1.0	
FP665	6	6.5	17	85	3.35	48	1.89	100	3.94	106	4.17	T1	A	1.05	
FP670	6	7	16	151	5.94	34	1.34	94	3.7	100	3.94	T1/T2	C	1.15	
FP672	6	7.2	16	151	5.94	34	1.34	94	3.7	100	3.94	T1/T2	C	1.15	
FP685	6	8.5	9	170	6.69	35	1.38	70	2.76	2.99	T1	C	0.88		
FP680	6	8	8	170	6.69	35	1.38	70	2.76	2.99	T1	C	0.88		
FP680	6	8	10	98	3.86	56	2.2	117	4.81	119	4.69	T1	B	1.2	
FP680A	6	8	10	98	3.86	56	2.2	110	4.33	114	4.49	T1	D	1.2	
FP6100	6	10	14	151	5.94	50	1.97	94	3.7	100	3.94	T1/T2	C	1.6	
FP6120	6	12	10	108	4.25	71	2.8	140	5.51	140	5.51	+T2/-T1	C	1.75	
FP6140	6	14	10	108	4.25	71	2.8	140	5.51	140	5.51	H/S plug	2.25		
FP6140W	6	14	16	108	4.25	71	2.8	140	5.51	140	5.51	H/S plug	2.25		
FP6200	6	20	8	157	6.18	83	3.27	125	4.92	130	5.12	T3	C	3.1	
FP632	6	3.2	30	68	2.68	49	1.93	91	3.58	91	3.58	Tab	L	0.63	
FP632A	6	3.2	28	134	5.28	36	1.42	63	2.48	69	2.72	T1	E	0.85	

* Total height stands for overall height including terminals. Some models have two data for different terminal. eg. Model LP6200, the total height show as 246/229 and the terminal show as 15/111, that means the total height 246 for T5 terminal and 229 for T11 terminal.

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg				
FP1208	12	0.8	200	96	3.78	25	0.98	62	2.44	62	2.44	plug	O	0.33
FP1212	12	1.2	90	97	3.82	43	1.69	52	2.05	58	2.28	T1	E	0.52
FP1214	12	1.4	70	97	3.82	48	1.89	51	2.01	57	2.24	T1	F	0.54
FP1212A	12	1.2	110	97	3.82	48	1.89	51	2.01	57	2.24	Tab	L	0.67
FP1220M	12	2.0	150	144	5.67	24	0.94	65	2.56	65	2.56	Tab	L	0.55
FP1220C	12	1.6	150	144	5.67	24	0.94	65	2.56	65	2.56	Tab	L	0.55
FP1220	12	2	65	178	7.01	35	1.38	61	2.4	67	2.64	T1	C	0.80
FP1223	12	2.3	60	182	7.17	24	0.94	62	2.44	62	2.44	Tab		0.88
FP1233C	12	2.3	130	182	7.17	24	0.94	62	2.44	62	2.44	Tab		0.71
FP1233A	12	2.3	140	201	7.91	24	0.94	62	2.44	62	2.44	Tab		0.72
FP1220A	12	2	72	70	2.76	48	1.89	98	3.86	104	4.09	T1	C	0.75
FP1233A	12	2.3	60	70	2.76	48	1.89	98	3.86	104	4.09	T1	C	0.80
FP126A	12	2.6	55	178	7.01	34	1.34	60	2.36	71	2.8	T1	F	0.82
FP1226	12	2.6	35	178	7.01	34	1.34	60	2.36	71	2.8	T1	F	0.82
FP125	12	2.5	42	104	4.09	48	1.89	70	2.76	70	2.76	+T2/-T1	M	0.90
FP1227	12	2.7	38	67	2.64	67	2.64	97	3.82	103	4.06	T1	C	0.89
FP1228	12	2.8	50	67	2.64	67	2.64	97	3.82	103	4.06	T1	C	0.89
FP1228A	12	2.8	50	132	5.2	33	1.3	98	3.86	104	4.09	T1	C	1.0
FP1229	12	2.9	42	79	3.11	56	2.2	99	3.9	105	4.13	T1	D	1.05
FP1232	12	3.2	52	134	5.28	67	2.64	61	2.4	67	2.64	T1	E	1.22
FP1234	12	3.4	50	134	5.28	67	2.64	61	2.4	67	2.64	T1	E	1.3
FP1242	12	4.2	45	195	7.68	47	1.85	70	2.76	76	2.98	T1	C	1.43
FP1245A	12	4.5	40	195	7.68	47	1.85	70	2.76	76	2.98	T1	C	1.58
FP1240	12	4	55	90	3.54	70	2.76	101	3.98	107	4.21	T1	C	1.46
FP1245	12	4.5	45	90	3.54	70	2.76	101	3.98	107	4.21	T1	C	1.60
FP1250	12	5	26	140	5.51	48	1.89	102	4.02	103	4.06	+T2/-T1	C	1.85
FP1260	12	6	22	140	5.51	48	1.89	102	4.02	103	4.06	+T2/-T1	C	1.8
FP1265	12	6.5	24	151	5.94	52	2.05	94	3.7	99	3.9	T2/T1	F	1.92
FP1265S	12	6.5	24	151	5.94	51	2.01	95	3.74	100	3.94	+T2/-T1	F	1.9
FP1265A	12	6.5	30	140	5.51	48	1.89	102	4.02	103	4.06	T1	C	2.02
FP1270	12	7	28	140	5.51	48	1.89	102	4.02	103	4.06	T1	C	2.22
FP1272	12	7.2	28	151	5.94	65	2.56	94	3.7	100	3.94	T1/T2	F	2.26
FP1275	12	7.5	22	151	5.94	65	2.56	94	3.7	100	3.94	T1/T2	F	2.3
FP1285	12	8.5	20	170	6.69	35	1.38	70	2.76	2.99	T1	C	2.45	
FP1290	12	9	19	170	6.69	35	1.38	70	2.76	2.99	T1	C	2.60	
FP12100A	12	10	19	151	5.94	65	2.56	111	4.37	117	4.61	T2/T1	F	2.75
FP12100	12	10	32	151	5.94	65	2.56	111	4.37	117	4.61	T2/T1	F	3.15
FP12120	12	12	19	151	5.94	65	2.56	111	4.37	117	4.61	T2/T1	F	3.5
FP12150A	12	15	20	160	6.3	76	2.99	159	6.26	162	6.38	T3	C	4.5
FP12150	12	15	18	160	6.3	76	2.99	159	6.26	162	6.38	T3	C	4.5
FP12170	12	17	17	181	7.13	77	3.03	167	6.57	167/167	6.57/6.57	T3/T8	D	5.0
FP12180	12	18	16	181	7.13	77	3.03	167	6.57	167/167	6.57/			

Standard Battery Series: LFP Type

Voltage: 6V, 8V, 12V, Capacity: 3.3AH to 280AH
 Designed floating service life : 12 Years at 20°C/68°F to 25°C/77°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Weight Kg
LFP636	6	36	4.5	162	6.4	88	170	T2	5.5
LFP642	6	42	4.2	182	6.4	88	170	T2	6.2
LFP645	6	45	4	182	6.4	88	170	T2	6.4
LFP6100	6	100	3	184	7.6	170	210	T9	15.0
LFP6100A	6	100	3	281	11.1	128	204	T11	15.5
LFP6150	6	150	2.5	260	10.24	180	245	T11	23.5
LFP6180B	6	180	2.3	307	12.1	169	225	T11	28
LFP6200B	6	200	2	321	12.64	176	226	T5/T11	30
LFP6200	6	200	2	321	12.64	176	226	T5/T11	30.5
LFP6225	6	225	1.8	307	12.1	169	225	T11	32
LFP6180	6	180	2.2	307	12.1	169	225	T11	27.5
LFP6200A	6	200	2	307	12.1	169	225	T11	29
LFP6190	6	190	2.2	243	9.6	187	276	T11	28.5
LFP6220	6	220	2	295	11.61	178	246	T11	32
LFP6300	6	300	1.5	280	10.24	180	245	T11	47
LFP6180	8	180	3	280	10.24	182	246	T11	36.5
LFP1233	12	33	10	195	7.7	130	180/166	T7/T9	9.2
LFP1235	12	35	9	195	7.7	130	180/166	T7/T9	10.2
LFP1234	12	34	11	310	12.2	77	172/180	T2/T3	9.5
LFP1238	12	38	9	197	7.8	165	170	T4/T9	12.0
LFP1240	12	40	8.5	197	7.8	165	170	T4/T9	12.5
LFP1245	12	45	8	197	7.8	165	170	T4/T9	13.7
LFP1240A	12	40	8.5	197	7.8	165	170	T4/T9	12.8
LFP125A	12	45	8	197	7.8	165	170	T4/T9	14
LFP1240B	12	40	8.5	197	7.8	166	170	T4/T9	12.8
LFP1250	12	50	7.5	229	9	138	230/211	T5/T9	16.0
LFP1255	12	55	6.5	250	9.8	160	200/181	T5/T9	18.5
LFP1260B	12	60	6	250	9.8	160	200/181	T9	19
LFP1260C	12	60	6	220	8.66	121	247	T9	18.5
LFP1260	12	60	7	250	9.8	160	200/181	T9	18.5
LFP1270	12	70	6.5	260	10.2	168	233/214	T5/T9	21.5
LFP1275	12	75	6	260	10.2	168	233/214	T5/T9	22.5
LFP1280A	12	80	5.5	260	10.2	168	233/214	T5/T9	23.5
LFP1285	12	85	5	260	10.2	168	233/214	T5/T9	24.3
LFP1285	12	85	6	208					20.8
LFP1270S	12	70	5.5	350	13.78	167	179	T5/T9	21.5
LFP1275S	12	75	5.4	350	13.78	167	179	T5/T9	22.2
LFP1278	12	78	5	350	13.78	167	179	T5/T9	22.4
LFP1280	12	80	4	350	13.78	167	179	T5/T9	23.2
LFP1285A	12	85	6.5	350	13.8	166	174	T1/T9	21
LFP1285B	12	85	6	330	13	173	167	T9	20.8
LFP1280A	12	80	5	330	13	171	167	T9	20.8
LFP12100A	12	100	4.5	330	13	171	167	T9	26.8
LFP12120A	12	110	4	330	13	171	167	T9	30.0
LFP1290	12	90	5.5	306	12.05	169	233	T5/T9	32.5
LFP1295	12	95	5	306	12.05	169	233	T5/T9	27
LFP12100V	12	100	4	406	15.98	173	208	T1/9T5/T11	30.5
LFP12120C	12	120	4	330	12.99	220	166	T9	35
LFP12100C	12	100	4.5	330	12.99	220	166	T9	30
LFP12100S	12	100	4.5	409	16.1	176	225	T5/T11	31
LFP12120	12	120	4	443	17.4	167	224	T5	35
LFP12120B	12	120	4	281	11.1	267	10.5	T11	33
LFP12110	12	110	4	281	11.1	267	10.5	T11	33
LFP12134	12	134	3.8	342	13.46	172	280	T11	41.3
LFP12150C	12	150	3.2	342	13.46	172	280	T11	45.5

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Weight Kg
LFP12145	12	145	5	428.5	16.9	177	268	M6 bolt	44.5
LFP12150A	12	150	4.5	428.5	16.9	177	268	M6 bolt	47
LFP12160A	12	160	4.2	485	19.1	172	242/240	T5/T11	49.5
LFP12150	12	150	3.5	485	19.1	172	242/240	T5/T11	43
LFP12150B	12	150	3.6	494	19.45	163	227	T11/T13	45
LFP12160	12	160	4.2	530	20.8	207	217	T5/T9	49.5
LFP12150S	12	150	3.8	494	19.45	206	8.23	T20/T11	47
LFP12180	12	180	3.3	494	19.45	206	8.23	T20/T11	54
LFP12200A	12	200	2.8	522	20.6	238	9.4	T5/T11	57
LFP12200	12	200	2.8	522	20.6	238	9.4	T5/T11	60.5
LFP12225	12	225	2.8	499	19.6	280	10.2	T12	61
LFP12200S	12	200	3.3	499	19.6	280	10.2	T12	64.5
LFP12220S	12	220	3	521	20.51	269	10.59	T5/T11	66.5
LFP12230	12	230	2.8	521	20.5	269	10.6	T5/T11	72.8
LFP12250	12	250	2.6	521	20.5	269	10.6	T5/T11	72.8

Standard Battery Series: CFP Type

Voltage: 2V, Capacity: 50AH to 3000AH
 Designed floating service life : 20 Years at 20°C/68°F to 25°C/77°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Weight Kg
CFP250	2	50	1.1	161	6.3	50	2	T4	3.0
CFP2100	2	100	0.8	171	6.7	72	2.8	T11	5.4
CFP2150	2	150	0.6	171	6.7	102	4	T11	8.1
CFP2200	2	200	0.9	173	6.8	109	4.3	T10	12.4
CFP2250	2	250	0.75	171	6.7	151	5.9	T10	14.5
CFP2350	2	350	0.65	210	8.3	171	6.9	T10	17.5
CFP2400	2	400	0.6	210	8.3	171	6.9	T10	19.2
CFP2450	2	450	0.5	241	9.5	171	6.7	T10	24.2
CFP2500	2	500	0.5	241	9.5	171	6.7	T10	27.5
CFP2550	2	550	0.45	302	11.9	175	6.9	T10	29.2
CFP2600	2	600	0.45	302	11.9	175	6.9	T10	35
CFP2800	2	800	0.35	410	16.1	175	6.9	T10	48.5
CFP21000	2	1000	0.28	475	18.7	175	6.9	T10	59.5
CFP21200	2	1200	0.25	400	15.7	350	13.8	T10	66
CFP21500	2	1500	0.2	400	15.7	350	13.8	T10	91
CFP22000	2	2000	0.18	490	19.3	350	13.8	T10	120
CFP22400	2	2400	0.15	710	28	350	13.8	T10	138
CFP23000	2	3000	0.11	710	28	350	13.8	T10	185
CFP2200S	2	200	0.8	206	8.1	103	4.1	T10	15
CFP2250S	2	250	0.75	206	8.1	124	4.9	T10	18.5
CFP2300S	2	300	0.7	206	8.1	145	5.7	T10	20.5
CFP2350S	2	350	0.65	206	8.1	124	4.9	T10	23
CFP2400S	2	400	0.55	206	8.1	145	5.7	T10	25.5
CFP2500S	2	500	0.45	206	8.1	166	6.5	T10	31.5
CFP2600S	2	600	0.4	206	8.1	145	5.7	T10	34.5
CFP2770S	2	770	0.35	253	10	210	8.3	T10	42.5
CFP2800S	2	800	0.35	210	8.3	191	7.5	T10	47
CFP21000S	2	1000	0.3	233	9.2	210	8.3	T10	57
CFP21200S	2	1200	0.25	275	10.8	210	8.3	T10	67
CFP21500S	2	1500	0.2	275	10.8	210	8.3	T10	84
CFP22000S	2	2000	0.18	399	15.7	210	8.3	T10	103
CFP23500S	2	2500	0.15	487	19.2	212	8.3	T10	148
CFP25000S	2	3000	0.12	576	22.7	212	8.3	T10	185

Deep Cycle Battery Series Specifications

Voltage: 6V, 8V, 12V, 18V, 24V, 36V Capacity: FirstPower can produce high temperature battery which capacity from 4.5Ah to 3000Ah. Battery cycle life is more than 350 cycles at 80% DOD at 20°C/68°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg
FP1200L	12	7	28	151	5.84	65	100	3.94	T1/T2	2.35
FP1200M	12	14	16	151	5.84	98	101	3.88	T2	4.7
FP1200H	12	24	10	166	6.53	175	102	4.92	T3/T8	7.9
FP1200L	12	28	10	166	6.53	175	102	4.92	T3/T8	8.7
FP1200M	12	40	8.1	321	12.6	176	206	8.9	T5/T11	13.5
FP1200H	12	50	7.5	229	10.2	138	5.4	208	8.2	16.8
FP1250L	12	55	6.5	258	10.2	133	5.2	200	7.9	17.8
FP1250M	12	65	6	350	13.8	167	6.6	179	7	22.5
FP1250H	12	65	6	350	13.8	167	6.6	179	7	22.5
FP1260L	12	70	6.5	280	10.2	168	6.6	211	8.3	23.7
FP1260M	12	80	5.4	306	12	169	6.7	211	8.3	25.0
FP1260H	12	90	5.5	330	13	171	6.7	214	8.4	28.5
FP12100L	12	100	4.5	409	16.1	176	6.9	225	8.9	32
FP12100M	12	120	4	409	16.1	176	6.9	225	8.9	37
FP12100L	12	150	3.5	485	19.1	172	6.8	240	9.4	46
FP12100M	12	200	2.8	522	20.6	238	9.4	218	8.6	65
FP12100H	12	250	2.6	521	20.5	239	9.4	218	8.6	78
FP12100FT	12	50	6.5	277	10.91	108	4.17	221	8.7	17.5
FP12100FT	12	75	6	321	12.6	176	6.6	179	7	22.5
FP12100FT	12	100	5	409	16.1	176	6.9	225	8.9	32
FP12100FT	12	120	4.5	409	16.1	176	6.9	225	8.9	37
FP12100FT	12	150	3.5	485	19.1	172	6.8	240	9.4	46
FP12100FT	12	200	2.8	522	20.6	238	9.4	218	8.6	65
FP12100FT	12	250	2.6	521	20.5	239	9.4	218	8.6	78
FP12150FT	12	170	4	546	21.5	125	4.9	317	12.5	54
FP12150FT	12	180	3.8	560	22.05	126	4.96	280	11.02	49
FP12150FT	12	180	3.6	560	22.05	126	4.96	280	11.02	53
FP12250FT	12	200	3.2	546	21.5	125	4.9	317	12.5	59

Long Life Battery Series Specifications

Voltage: 6V & 12V Capacity: 40AH to 250AH Battery floating service life can target 15 years at 20°C/68°F to 25°C/77°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg
FP1200L	12	7	28	151	5.84	65	100	3.94	T1/T2	2.35
FP1200M	12	14	16	151	5.84	98	101	3.88	T2	4.7
FP1200H	12	24	10	166	6.53	175	102	4.92	T3/T8	7.9
FP1200L	12	28	10	166	6.53	175	102	4.92	T3/T8	8.7
FP1200M	12	40	8.1	321	12.6	176	206	8.9	T5/T11	13.5
FP1200H	12	50	7.5	229	10.2	138	5.4	208	8.2	16.8
FP1250L	12	55	6.5	258	10.2	133	5.2	200	7.9	17.8
FP1250M	12	65	6	350	13.8	167	6.6	179	7	22.5
FP1250H	12	65	6	350	13.8	167	6.6	179	7	22.5
FP1260L	12	70	6.5	280	10.2	168	6.6	211	8.3	23.7
FP1260M	12	80	5.4	306	12	169	6.7	211	8.3	25.0
FP1260H	12	90	5.5	330	13	171	6.7	214	8.4	28.5
FP12100L	12	100	4.5	409	16.1	176	6.9	225	8.9	32
FP12100M	12	120	4	409	16.1	176	6.9	225	8.9	37
FP12100L	12	150	3.5	485	19.1	172	6.8	240	9.4	46
FP12100M	12	200	2.8	522	20.6	238	9.4	218	8.6	65
FP12100H	12	250	2.6	521	20.5	239	9.4	218	8.6	78
FP12100FT	12	50	6.5	277	10.91	108	4.17	221	8.7	17.5
FP12100FT	12	75	6	321	12.6	176	6.6	179	7	22.5
FP12100FT	12	100	5	409	16.1	176	6.9	225	8.9	32
FP12100FT	12	120	4.5	409	16.1	176	6.9	225	8.9	37
FP12100FT	12	150	3.5	485	19.1	172	6.8	240	9.4	46
FP12100FT	12	200	2.8	522	20.6	238	9.4	218	8.6	65
FP12100FT	12	250	2.6	521	20.5	239	9.4	218	8.6	78
FP12150FT	12	170	4	546	21.5	125	4.9	317	12.5	54
FP12150FT	12	180	3.8	560	22.05	126	4.96	280	11.02	49
FP12150FT	12	180	3.6	560	22.05	126	4.96	280	11.02	53
FP12250FT	12	200	3.2	546	21.5	125	4.9	317	12.5	59

High Rate Discharge Battery Series Specifications

Voltage: 6V & 12V Capacity: 12AH to 250AH Designed floating service life: FP type: 5 Years / LFP type: 10 Years at 20°C/68°F

Model	Nominal Voltage (V)	15 min. Rate Capacity (Watts/Cell)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg				
FR645HR	6	19	4.5	15	70	2.8	47	1.9	101	4	107	4.2	T1/T2	A	0.8
FR650HR	6	22	5	12	70	2.8	47	1.9	101	4	107	4.2	T1/T2	A	0.9
FR670HR	6	31	7	9	151	5.9	34	1.3	94	3.7	100	3.9	T1/T2	C	1.28
FR690HR	6	34	9	8	151	5.9	34	1.3	94	3.7	100	3.9	T1/T2	C	1.35
FR120HR	6	51	12	6	151	5.9	50	2	94	3.7	100	3.9	T1/T2	C	2
FR1245HR	12	19	4.5	26	90	3.5	70	2.8	101	4	107	4.2	T1/T2	C	1.6
FR1250HR	12	22	5	22	90	3.5	70	2.8	101	4	107	4.2	T1/T2	C	1.8
FR1260HR	12	24	6	18	151	5.9	52	2	94	3.7	99	3.9	T2/T1	F	2.1
FR1270HR	12	31	7	20	151	5.9	65	2.6	94	3.7	100	3.9	T1/T2	F	2.45
FR1290HR	12	34	9	18	151	5.9	65	2.6	94	3.7	100	3.9	T1/T2	F	2.65
FR12120HR	12	51	12	11	151	5.9	98	3.9	95	3.7	101	4	T2	F	4.0
FR12180HR	12	76	18	10	181	7.1	77	3	167	6.6	167/167	6.6/6.6	T3/T8	D	5.7
FR12200HR	12	82	20	12	181	7.1	77	3	166	6.5	166	6.5	T8	D	6.3
FR12240HR	12	100	24	10	166	6.5	175	6.9	125	4.9	125/125	4.9/4.9	T3/T8	D	8.2
FR12280HR	12	110	28	9	165	6.5	125	4.9	125	4.9	182/175	7.2/6.9	T6/T8	D	9.3
FR1233HR	12	125	33	9	195	7.7	130	5.1	165	6.1	180/166	7.1/6.6	T7/T9	C	10.5
FR1249HR	12	160	45	7.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	D	14.2
FR1265HR	12	240	65	5.5	350	13.8	167	6.6	179	7	186/179	7.3/7.1	T5/T9	C	21
FR1270HR	12	250	70	6	350	13.8	167	6.6	179	7	186/179	7.3/7.1	T5/T9	C	22.5
FR1275HR	12	282	75	5.5	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	C	23
FR1280HR	12	290	80	5	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	C	24.5
FR1290HR	12	330	90	4.5	306	12	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	C	29.5
FR12100HR	12	390	100	3.5	330	13	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	C	32.5
FR12120HR	12	425	120	3.2	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	C	38
FR12134HR	12	475	134	3.5	342	13.5	172	6.8	280	11	285	11.2	T11	C	43
FR12140HR	12	500	140	3.2	342	13.5	172	6.8	280	11	285	11.2	T11	C	46
FR12150HR	12	535	150	3	485	19.1	172	6.8	240	9.4	242/240	9.5/9.4	T5/T11	C	47
FR12200HR	12	710	200	2.8	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	C	65
FR12250HR	12	710	200	3	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	A	32.5

High Temperature Battery Series Specifications

Voltage: 6V & 12V Capacity: FirstPower can produce high temperature battery which capacity from 0.3Ah to 3000Ah Battery performance can be expected at the ambient temperatures at -15°C/5°F to 70°C/158°F

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Total Height mm	Terminal Type	Terminal Position	Weight Kg				
FP1270T	12	7	28	151	5.9	65	100	3.9	T1	2.25				
FP12120T	12	12	19	151	5.9	98	101	3.7	T2	3.6				
FP12180T	12	18	16	181	7.1	77	3	167	6.6	167/167	6.6/6.6	T3/T8	D	5.35
FP12240T	12	24	14	166	6.5	175	6.9	125	4.9	125/125	4.9/4.9	T3/T8	D	7.8
FP1230T	12	30	10	200	7.5	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	A	32
FP1233T	12	33	10	195	7.7	130	5.1	155	6.1	180/166	7.1/6.5	T7/T9	C	10
FP1240T	12	40	8.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	D	13
FP1265L	12	65	6	350	13.8	167	6.6	179	7	186/179	7.3/7.1	T5/T9	C	21
FP1260T	12	60	7	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	C	21
FP1270T	12	60	5.5	306	12	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	C	25
FP1280T	12	80	5.5	330	13	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	C	32
FP12100T	12	100	4.5	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	C	37
FP12120T	12	120	4	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	C	37
FP12150T	12	150	3.5	485	19.1	172	6.8	240	9.4	242/240	9.5/9.5	T5/T11	C	46.5
FP12200T	12	200	3	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	E	65
FP12250T	12</													



Gel Battery (gelled electrolyte)

1 | Introduction

The FirstPower gelled battery uses the sealed gel technology and is designed for high reliable, maintenance-free power for renewable energy applications. Depending on the advantage gel technology, optimum grid and plate design, the FirstPower gel battery offers highest power and reliability for your equipments.

2 | Features and Benefits

Gelled electrolyte By the high-tech gelled electrolyte, gel battery is completely leakproof and spillproof for easy installation in virtually any position even under water. It eliminates ultra deep discharge and acid stratification damage.

Critical pressure control valve maintains critical internal pressure while safety expelling excess gas generated during overcharging, for longer battery life. 100% tested for highest performance.

Brushed plate lugs provide the benefits. Low-resistance straps with outstanding lug-to-knit and eliminate dropped and loose plates that reduce performance and shorten battery life. Heavy-duty plates with high density and deep-cycle oxide active materials, advanced grid alloy for deep cycle use, provide quick recharge ability and superior deep-cycle and float performance in the most demanding applications.

Be good at recovery from deep discharge Gelled battery has a tight structure and relative supplies of gelled electrolyte, always has some

ions left to conduct charge current resulting in the excellent recovery from deep discharge characteristics.

Completely maintenance-free use the "recombination" technique to replaces the oxygen and hydrogen normally lost in a met cell. Particularly in deep cycle applications (normally use the wet battery), and offer a really maintenance free battery.

Tank formed plates offer optimum computerized formation, additional quality control and improved voltage matching.

PVC separators reduce gassing and improve gel filling and electron flowing, providing more power.

Well low temperature performance, even at very low temperature the gelled electrolyte will not be frozen and provide a well performance. Gel battery is well suited to low temperature applications.

Superior life. The FirstPower gelled battery maintain a long cycle and float life, provide a lowest cost per month or lowest cost per cycle

3 | Applications

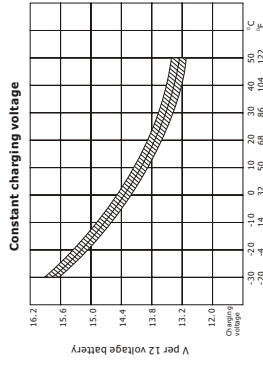
- Water pumping
- Wind generation
- Cathodic protection
- Communications
- Solar system
- Electric powered vehicles
- Golf cars
- Commercial deep cycle applications
- Power plant
- UPS systems

4 | Charging

While the FirstPower gelled battery will accept a charge extremely well due to its low internal resistance.

For using the sealed design, over-charging will dry out the electrolyte by driving the oxygen and hydrogen out of the battery, through the safety valves. Capacity is reduced and life is shortened If a battery is continually under-charged, a power robbing layer of sulfate will buildup on the plates. Battery performance is reduce, life is reduced.

So what is important for gelled battery that is: charge at least 2.30V/Cell volts but no more than 2.35V/Cell volts at 68°F(20°C) for cycle use, 2.25~2.30V standby use. Constant current chargers should never be used on gelled battery.



Constant charging voltage: Shown is the constant charging voltage in relation to the ambient temperature. The bandwidth shows a tolerance of ±30mV/Cell. This constant voltage is suitable for continuing charging and cyclic operation. In a parallel standby mode it always keeps battery in a fully charged state; in a cyclic mode, it provide for a rapidly recharging and highly cyclic performance.

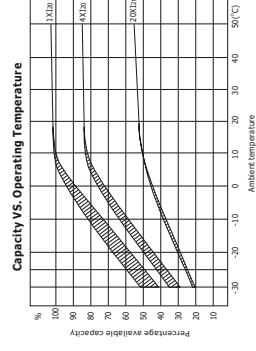
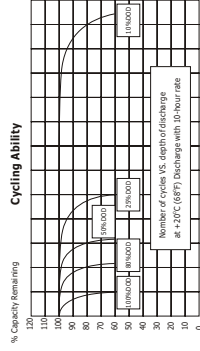
5 | Discharging & Cycling Ability

Battery discharge capacity and cycle life are depended on the depth of discharge (DOD), and the ambient temperature.

FirstPower gelled battery is designed to the "acid limited." This means that the power in the acid is used before the power in the plates. This design prevents the plates from ultra-deep discharges. Ultra-deep discharging is what causes life-shortening plates shedding and accelerates positive grid corrosion which destroy a battery.

Capacity vs. operating temperatures: shown are the changes in capacity for a wider ambient temperature range, giving the available capacity, as a percentage of the rated capacity, at different ambient temperatures, for 3 different load examples, with uninterrupted discharge to the appropriate discharge cut-off voltage.

The values for the upper edge of the curves were obtained from charging at an ambient temperature of +20°C with a voltage limit to 2.30V/Cell. For the lower edge, charging was carried out at the specified ambient temperature. The curves show the behavior of battery after a number of cycles.



Gelled Battery Series Specifications

Voltage: 2V, 6V, 12V Capacity: FP Type: 12V12AH~12V28AH; LFP Type: 12V33AH~12V250AH; CFP Type: 2V100AH~2V3000AH
 Charge voltage: Cycle use: 2.30~2.35V/cell; Float use: 2.25~2.30V/cell Charge current: The initial current less than 0.3CA

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Length mm	Width mm	Height mm	Dimensions in	Total Height in	Terminal Type	Position	Weight Kg	
FPG12180	12	18	16	181	77	3.03	167	6.57	T8	C	5	
FPG12240	12	24	20	166	6.54	175	6.89	125	4.92	T6	C	7.4
FPG12280	12	28	15									8
FPG12280A	12	28	14	165	6.5	125	4.92	175	6.89	T8	C	9
LFPG6100	6	100	3.3	194	7.6	170	6.7	205	8.1	T9	A	15.8
LFPG6190	6	190	2.2	243	9.6	187	7.4	263	10	T11	A	31
LFPG1233	12	33	11	195	7.7	130	5.1	155	8.9	T9	C	10.2
LFPG1240	12	40	9.5	197	7.8	165	6.5	170	6.7	T9	D	12.5
LFPG1255	12	55	7	229	9	138	5.4	208	8.2	T9	C	17
LFPG1265	12	65	6.6	350	3.8	167	6.6	179	7	T9	C	21
LFPG1260	12	60	7.7									22
LFPG1270	12	70	7	260	10.2	188	6.6	211	8.3	T9	C	24
LFPG1280	12	80	6.5	306	12.05	169	6.65	211	8.3	T9	C	27.5
LFPG1290	12	90	5.8	306	12.05	169	6.65	211	8.3	T9	C	28.5
LFPG1290H	12	90	5.4	330	13	171	6.7	214	8.4	T9	C	31
LFPG12100	12	100	5	330	13	171	6.7	214	8.4	T9	C	32
LFPG12110	12	110	5.2	330	13	171	6.7	225	8.86	T9	C	33.5
LFPG12120	12	120	4.4	409	16.1	176	6.9	225	8.9	T11	C	36.5
LFPG12140	12	134	4.2	342	13.5	172	6.8	280	11	T11	C	42.5
LFPG12150	12	150	3.9	485	19.1	172	6.8	240	9.4	T11	C	44
LFPG12180	12	180	3.6	484	19.4	206	8.1	209	8.2	T11	C	55
LFPG12160	12	160	3.2	530	20.8	207	8.15	214	8.43	T11	C	53
LFPG12200	12	200	3.3	522	20.6	238	9.4	218	8.6	T11	C	66
LFPG12250	12	250	2.9	521	20.5	269	10.6	220	8.7	T11	E	75
LFPG1250FT	12	50	7.2	277	10.91	106	4.17	221	8.7	T9	E	17
LFPG12100FT	12	100	5.4	506	19.9	110	4.3	224	8.8	T9	E	31
LFPG12150FT	12	150	4	551	21.7	110	4.3	287	11.3	T11	E	47
LFPG12180FT	12	180	3	546	21.5	125	4.9	317	12.5	T11	E	57
CFPG2100	2	100	0.9	171	6.7	72	2.8	206	8.1	T10	A	6
CFPG2150	2	150	0.7	171	6.7	102	4	206	8.1	T10	A	8.5
CFPG2200	2	200	0.95	173	6.8	109	4.3	330	8.3	T10	G	14
CFPG2300	2	300	0.8	171	6.7	151	5.9	330	8.3	T10	G	19.5
CFPG2400	2	400	0.65	210	8.3	176	6.9	330	8.3	T10	H	26.5
CFPG2500	2	500	0.55	241	9.5	171	6.7	330	8.3	T10	H	31.5
CFPG2600	2	600	0.5	302	11.9	175	6.9	330	8.3	T10	H	38
CFPG2800	2	800	0.4	410	16.1	175	6.9	330	8.3	T10	I	53.5
CFPG21000	2	1000	0.3	475	18.7	175	6.9	330	8.3	T10	I	64
CFPG21500	2	1500	0.22	400	15.7	350	13.8	345	13.6	T10	J	97
CFPG22000	2	2000	0.2	490	19.3	350	13.8	345	13.6	T10	K	130
CFPG23000	2	3000	0.13	710	28	350	13.8	345	13.6	T10	K	198
CFPG2200S	2	200	0.9	206	8.1	103	4.1	365	14	T10	G	15.5
CFPG2250S	2	250	0.8	206	8.1	124	4.9	365	14	T10	G	19
CFPG2300S	2	300	0.75	206	8.1	146	5.7	365	14	T10	G	21
CFPG2350S	2	350	0.7	206	8.1	124	4.9	471	18.5	T10	G	24
CFPG2400S	2	400	0.6	206	8.1	145	5.7	471	18.5	T10	G	27.5
CFPG2500S	2	500	0.5	206	8.1	166	6.5	471	18.5	T10	G	32
CFPG2600S	2	600	0.45	206	8.1	145	5.7	646	25.4	T10	G	43
CFPG2800S	2	800	0.4	210	8.3	191	7.5	646	25.4	T10	H	60
CFPG21000S	2	1000	0.33	233	9.2	210	8.3	646	25.4	T10	H	71
CFPG21200S	2	1200	0.28	275	10.8	210	8.3	646	25.4	T10	H	87
CFPG21500S	2	1500	0.22	275	10.8	210	8.3	796	31.3	T10	H	105
CFPG22000S	2	2000	0.2	399	15.7	210	8.3	772	30.4	T10	I	150
CFPG22500S	2	2500	0.17	487	19.2	212	8.3	772	30.4	T10	I	187
CFPG23000S	2	3000	0.13	576	22.7	212	8.3	772	30.4	T10	I	223



CFPV & LFPV (OPzV) Battery

The CFPV & LFPV (OPzV) series stationary batteries are the newly products which were developed at the end of 2005. The performances meet the standard DIN40742

Characteristics

- Gelled electrolyte, no flow, no leakage or no gradation of sulfuric acid.
- The positive plate is tubular plate, which can effectively prevent the active materials from falling off.
- PVC-SiO₂ separator, which is special for gel battery with tiny holes. The separator has high volume porosity, low electrical resistance and excellent wettability
- Maintenance-free during the whole service life.
- Low self discharge rate
- Proof against deep discharge according to DIN 43539 T5

Applications

- Telecommunication equipment
- Electronic instruments
- Fire alarm and security devices
- UPS power supply
- Solar power system
- Wind power system

Technical parameters

- Environment temperature: -20°C~50°C
- Environmental temperature for best utilization: 25°C±5°C
- Float charging voltage: 2.25~2.30V/unit
- Cycle charging voltage: 2.30~2.35V/unit
- Equalization voltage: 2.35V/unit
- Temperature adjustment coefficient: -3mV/°C/unit
- Max charging current: 0.20C₁₀A
- Design service life: 20years(20°C) less than 40% after 2 year storage at 20°C
- Self-discharge rate: The battery can be recharged to 95% of the rated capacity after 12-hour deep discharge
- Recover performance after deep discharge: Less than 40% after 2-year storage at 20°C
- The gas recombination efficiency exceeds:

CFPV & LFPV (OPzV) Battery Series Specifications

Voltage: 2V, 6V & 12V Capacity: 60AH to 3000AH
 Service life: Designed floating service life 20 years at 20°C/68°F
 Designed cycle life more than 1200 cycles at 80% DOD at 20°C/68°F

Type	Rated Voltage (V)	Rated Capacity (Ah)	Max Dimension (mm)			Weight (app.) +5%(Kg)	Terminal
			(L)	(W)	(H)	(TH)	
CFPV2200	2	200	103	206	354	390	16.5
CFPV2250	2	250	124	206	354	390	21.5
CFPV2300	2	300	145	206	354	390	23.5
CFPV2350	2	350	124	206	470	506	26.5
CFPV2420	2	420	145	206	470	506	30.8
CFPV2500	2	500	166	206	470	506	35.0
CFPV2600	2	600	145	206	645	681	44.5
CFPV2770	2	770	253	210	470	506	55.5
CFPV2800	2	800	191	210	645	681	59.5
CFPV21000	2	1000	233	210	645	681	69.5
CFPV21200	2	1200	275	210	645	681	82.0
CFPV21500	2	1500	275	210	795	831	98.5
CFPV22000	2	2000	399	210	772	807	149.5
CFPV22500	2	2500	487	212	772	807	174.0
CFPV23000	2	3000	576	212	772	807	209.5
LFPV680	6	80	194	170	205	210	14.5
LFPV6100	6	100	260	180	245	250	24.5
LFPV6120	6	120	260	180	245	250	26.5
LFPV6140	6	140	307	169	220	225	27.0
LFPV6160E	6	160	307	169	220	225	28.0
LFPV6160	6	160	321	176	226	246	29.5
LFPV1260	12	60	260	168	211	233	22.0
LFPV1280	12	80	330	171	214	220	30.5
LFPV12100	12	100	409	176	225	225	34.5
LFPV12120	12	120	495	172	240	240	43.5
LFPV12140	12	140	494	206	209	235	51.5
LFPV12140E	12	140	532	207	215	240	52.5
LFPV12160	12	160	522	238	218	221	61.5
LFPV12180	12	180	522	238	218	221	65.5
LFPV12200	12	200	521	269	203	223	73.5



CFPS & LFPS (OPzS) Battery

The CFPS(2V) and LFPS(6V/12V) series stationary batteries (OPzS battery) are the newly products which were developed at the end of 2005. The performances meet the standard DIN40736 and IECG0896-21

Characteristics

- **Positive plate:** It is a tubular plate that can prevent the active material from falling off. The grid of positive plate is Pb-Sb multi-alloy
- **Separator:** With the combined application of porous rubber and porous PVC, the separator has a high porosity and good corrosion-resistance
- **Acid-proof bolt:** It is of a special shape of funnel having the function of filtering acid smog and retarding flame. It can measure the density and temperature of electrolyte.
- The design life is more than 20 years
- Ensuring sufficient electrolyte for battery discharge

Applications

- Telecommunication equipment
- Electronic instruments
- Fire alarm and security devices
- UPS power supply
- Solar power system
- Wind power system

Technical parameters

Environment temperature: -20°C~50°C
 Environmental temperature for best utilization: 25°C+5°C
 Float charging voltage: 2.25~2.30V/unit
 Cycle charging voltage: 2.40~2.45V/unit
 Equalization voltage: 2.45V/unit
 Temperature adjustment coefficient: -3mV/°C/unit
 Max charging current: 0.20C₁₀A
 Design service life: 20years(20°C)

CFPS & LFPS (OPzS) Battery Series Specifications

Voltage: 2V, 6V & 12V. Capacity: 50AH to 3000AH
 Service life: Designed floating service life 20 years at 20°C/68°F
 Designed cycle life more than 1200 cycles at 80% DOD at 20°C/68°F

Type	Rated Voltage (V)	Rated Capacity (Ah)	Max.Dimension (mm)			(TH)	Battery weight(app.)(kg)		Number of post of the same polarity	Terminal
			(L)	(W)	(H)		Dry	Wet		
CFPS2100	2	100	103	206	354	409	8.5	13.5	5	1
CFPS2150	2	150	103	206	354	409	11	15.5	4.5	1
CFPS2200	2	200	103	206	354	409	13.5	17.5	4	1
CFPS2250	2	250	124	206	354	409	16	21	5	1
CFPS2300	2	300	145	206	354	409	18.5	24.5	6	1
CFPS2350	2	350	124	206	470	525	21	28	7	1
CFPS2420	2	420	145	206	470	525	24.5	33	8.5	1
CFPS2500	2	500	166	206	470	525	26	36	10	1
CFPS2600	2	600	145	206	645	700	31	43	12	1
CFPS2770	2	770	253	210	472	527	42.5	58	15.5	1
CFPS2800	2	800	181	210	645	700	44	60	16	2
CFPS21000	2	1000	233	210	645	700	52	72	20	2
CFPS21200	2	1200	275	210	645	700	62	86	24	2
CFPS21500	2	1500	275	210	795	850	75	105	30	2
CFPS22000	2	2000	399	210	771	826	108	150	42	3
CFPS22500	2	2500	487	212	771	826	130	183	52	4
CFPS23000	2	3000	576	212	771	826	157	220	63	4
LFPS680	6	80	184	170	205	210	11.4	14.0	2.6	
LFPS100	6	100	260	180	245	250	13.6	19.0	5.4	T9
LFPS120	6	120	260	180	245	250	15.5	22.0	6.5	
LFPS140	6	140	260	180	245	250	17.7	25.0	7.3	
LFPS140E	6	140	307	169	220	225	18.2	26.0	7.8	
LFPS160	6	160	307	169	220	225	18.5	27.0	8.5	T11
LFPS180E	6	180	307	169	220	225	19.5	29.0	9.5	
LFPS180	6	180	321	176	226	229	20.5	30.5	10.0	
LFPS1260	12	60	260	168	211	233	15.9	20.8	4.9	
LFPS1200E	12	80	306	169	211	233	20.7	27.5	6.8	1
LFPS1280	12	80	330	171	214	220	20.0	27.8	7.8	
LFPS12100	12	100	409	176	225	225	24.5	35.0	10.5	
LFPS12120	12	120	465	172	240	240	29.4	42.5	13.1	
LFPS12140	12	140	494	206	209	235	31.8	46.5	14.7	
LFPS12140A	12	140	532	207	215	240	32.5	48.5	16.0	
LFPS12160	12	160	522	238	218	221	36.7	53.5	16.8	
LFPS12180	12	180	522	238	218	221	41.6	60.5	18.9	
LFPS12180H	12	180	522	269	220	220	42.5	62.5	20.0	
LFPS12000	12	2000	521	269	203	223	46.5	67.5	21.0	
LFPS12200	12	2200	521	269	203	223	50.4	73.5	23.1	



Motor Cycle Battery

The FirstPower Motorcycle battery is engineered to protect against seepage and corrosion, deliver high cranking power, even when the weather's dealing its worst. It's the rugged, reliable and dependable battery that customers are looking for. The high-tech. Power-boosting design, FirstPower Motorcycle battery can provide right battery for right job - that's where it all starts.

The industry standard for motorcycles snowmobile and riding mowers, our motorcycle battery offers high cranking power, nice cold cranking performance, minimal internal resistance, maximum power.

With the lead-calcium technology and the AGM used, our Maintenance-free VRLA type motorcycle battery assume really sealed, Never needs refilling, offer a really maintenance-free battery for you.

Maintenance-free

- Non-spillable (no acid leakage).
- Can be used immediately and not need activation procession.
- High cranking current for rigors of cold weather starting.
- Resist vibration damage packs in extra plates.
- Resist corrosion for longer battery life.
- Resist damage from gas, oil, impact.



Motorcycle Battery Series Specifications

Model	Voltage (V)	Capacity (AH)	Dimensions (mm)		Terminal Position	Terminal Type	Weight (kg)
			Length	Width			
FPM4-6A	6	4	70	48	↓	Plug	0.8
FPM4-6B	6	4	71	71	↓	Plug	0.9
FPM6-6	6	6	97	55	-	1	1.2
FPM2.5-12	12	2.5	80	70	↓	Plug	1.15
FPM3-12	12	3	98	55	-	1	1.25
FPM4-12	12	4	114	70	-	3	1.55
FPM5-12A	12	5	120	61	-	1	1.8
FPM5-12B	12	5	114	70	-	3	1.75
FPM6.5-12	12	6.5	137	66	-	1	2
FPM7-12A	12	7	148	60	-	1	2.5
FPM7-12B	12	7	151	87	-	4	2.6
FPM7-12C	12	7	114	69	-	4	2.6
FPM9-12A	12	9	135	76	-	1	2.9
FPM9-12B	12	9	151	87	-	3	3
FPM12-12	12	12	153	89	-	3	3.7
FPM12-14	12	14	151	87	-	4	4.6
FPM12-20	12	20	177	88	-	4	6.0

Traction Battery

FirstPower traction batteries are used in electrically powered vehicles like forklift, tow truck, power trolley, lifting platforms and other industrial traction application. FirstPower traction batteries are made to BS and DIN specifications.

Benefits:

- Assembled in a high grade plastic container.
- Tubular positive plates and pasted negative plates.
- Longer life in cyclic use-more than 1600 cycles up to 80% depth of discharge.
- Low energy costs.
- Low water costs.
- Avoidance of insufficient discharging and of overcharging.
- Suitable for all weather conditions.

Maintenance:

- Allow the battery to cool down after every charging.
- Top up the battery at the end of the charge cyclic with the charging on and allow the battery to gas freely so that the specific gravity becomes uniform in the cell. Never add water to a discharged battery
- Keep the battery clean and dry.
- Check the terminal connectors for tightness.



Traction Battery: BS Specifications

Cell Type	Nominal Capacity (Ah)		Charging Intensity (A)		Dimension (mm)			Weight (kg)		
	5h	1h	Initial	Finish	(L)	(W)	(H)	(TH)	Dry	Wet
2FPB46	46	31	23	8		45			2.5	3.8
3FPB70	70	45	35	12		61			3.2	5.0
4FPB92	92	60	46	16		77			5.0	6.5
5FPB115	115	76	58	20		93			6.0	7.8
6FPB138	138	90	69	23	158	109	200	230	7.0	9.1
7FPB162	162	105	80	27		125			7.6	10.5
8FPB185	185	120	92	31		141			9.0	11.2
9FPB208	208	135	105	35		157			10.0	13.2
10FPB230	230	150	116	39		173			11.1	14.5
2FPB65	65	43	32	11		45			3.4	5.0
3FPB96	96	62	48	16		61			4.3	6.7
4FPB128	128	83	65	22		77			6.3	8.2
5FPB160	160	105	80	27		93			7.3	9.5
6FPB192	192	125	96	32	158	109	258	288	8.4	11.0
7FPB225	225	146	112	38		125			9.0	12.8
8FPB258	258	166	128	43		141			11.5	15.5
9FPB290	290	188	145	48		157			13.0	16.9
10FPB320	320	208	160	54		173			13.2	18.5
2FPB85	85	55	42	15		45			4.3	6.6
3FPB128	128	82	63	21		61			5.4	8.5
4FPB168	168	110	85	28		77			8.3	10.7
5FPB210	210	138	105	35		93			10.0	13.0
6FPB252	252	165	125	42	158	109	325	355	12.0	15.8
7FPB295	295	192	146	50		125			12.2	17.0
8FPB336	336	220	168	56		141			16.2	21.5
9FPB378	378	245	188	64		157			18.0	23.0
10FPB420	420	275	208	70		173			19.0	24.0
2FPB110	110	72	55	20		45			6.0	8.0
3FPB165	165	108	83	28		61			8.3	10.3
4FPB220	220	145	110	37		77			10.0	13.0
5FPB275	275	180	138	46		93			12.0	15.2
6FPB330	330	215	165	55	158	109	396	426	14.0	18.5
7FPB385	385	251	193	65		125			16.0	22.0
8FPB440	440	288	220	75		141			18.5	24.5
9FPB495	495	322	248	84		157			20.0	27.0
10FPB550	550	360	275	92		173			22.0	30.0

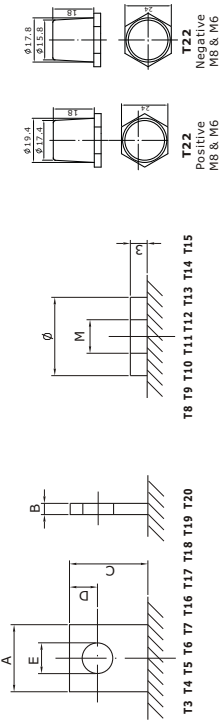
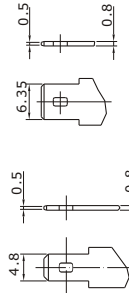
Traction Battery: DIN Specifications

Cell Type	Nominal Capacity (Ah)			Charging Intensity (A)		Dimension (mm)			Weight (kg)		
	5h	1h	0.5h	Initial	Finish	(L)	(W)	(H)	(TH)	Dry	Wet
2FPD100	100	65	50	17	5		45			4.8	7.2
3FPD150	150	96	75	25	7		64			7.1	9.5
4FPD200	200	130	100	35	9		82			9.6	11.9
5FPD250	250	164	125	42	11		101			11.6	14.2
6FPD300	300	196	150	50	13	198	118	265	300	13.5	17.0
7FPD350	350	229	175	60	15		137			16.0	21.0
8FPD400	400	260	200	67	17		155			18.3	22.2
9FPD450	450	295	225	75	19		172			21.0	26.2
10FPD500	500	325	250	85	21		192			22.8	30.0
2FPD120	120	78	65	20	6		45			6.6	9.3
3FPD180	180	118	98	30	9		64			9.5	13.5
4FPD240	240	156	130	40	12		82			12.2	15.3
5FPD300	300	195	163	50	15		101			15.0	18.6
6FPD360	360	239	195	60	18	198	118	330	365	17.4	23.8
7FPD420	420	275	228	72	21		137			20.5	27.3
8FPD480	480	315	260	80	24		155			23.0	30.5
9FPD540	540	350	293	92	27		172			25.5	32.5
10FPD600	600	390	325	100	30		192			28.0	40.2
2FPD160	160	105	80	27	7		45			8.0	10.1
3FPD240	240	156	120	40	10		64			11.2	15.0
4FPD320	320	208	160	54	14		82			14.5	18.7
5FPD400	400	260	200	67	17		101			17.7	23.0
6FPD480	480	315	240	80	20	198	118	400	435	20.5	27.0
7FPD560	560	365	280	94	24		137			24.0	32.0
8FPD640	640	418	320	107	27		155			27.5	36.0
9FPD720	720	468	360	120	30		172			33.0	41.0
10FPD800	800	520	400	135	34		192			34.5	45.2
2FPD180	180	120	92	30	7		45			9.5	11.5
3FPD270	270	180	138	46	11		64			13.0	16.5
4FPD360	360	240	185	61	15		82			17.0	22.2
5FPD450	450	300	230	76	19		101			21.0	26.5
6FPD540	540	360	276	92	23	198	119	465	500	24.0	31.5
7FPD630	630	420	322	107	27		137			28.0	36.5
8FPD720	720	478	368	122	30		155			32.5	43.6
9FPD810	810	538	415	138	34		173			35.5	48.0
10FPD900	900	596	460	153	38		192			39.5	53.0
2FPD210	210	137	105	35	9		45			10.5	12.5
3FPD315	315	205	158	53	14		65			14.2	19.3
4FPD420	420	275	210	70	18	198	83	510	545	18.2	23.5
5FPD525	525	342	265	88	22		101			22.0	28.6
6FPD630	630	410	315	105	27		119			26.5	33.8

Terminals and Position

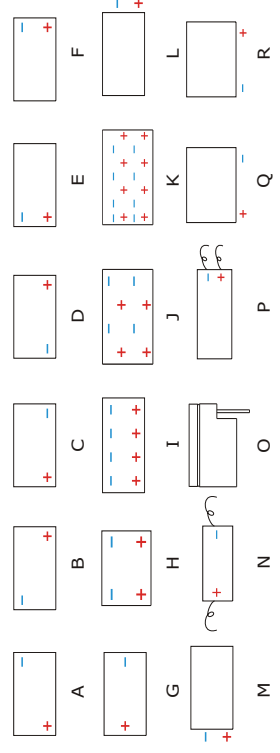
Terminal Types

Type	A	B	C	D	E	Material	Type	N	φ	Material
T3	12	2.0	14	5.0	5.5	Cu	T8	5	12	Cu
T4	20	3.0	16	7.0	6.0	Cu	T9	6	14	Cu
T5	22	3.5	22	8.5	8.0	Cu	T10	8	20	Cu
T6	17	9.0	18	8.0	6.0	Pb	T11	8	16	Cu
T7	17	6.0	16	7.0	8.0	Pb	T12	8	14	Cu
T16	20	3.0	18	7.5	8.0	Cu	T13	10	20	Cu
T17	18	7.0	20	7.5	7.0	Pb	T14	8	18	Cu
T18	23	7.0	19	8.5	7.0	Pb	T15	6	16	Cu
T19	25	7.0	24	10.5	9.0	Pb				
T20	27	8.0	29	12.0	9.0	Pb				

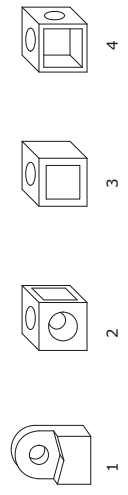


T3 T4 T5 T6 T7 T16 T17 T18 T19 T20 T8 T9 T10 T11 T12 T13 T14 T15 T22 Positive M8 & M6 Negative M8 & M6

Terminal Position



Motor Cycle Battery Terminal



Handling Precautions

Charging and Handling Precautions for FirstPower VRLA Batteries as Following.

- Never charge the battery in a sealed container.
- Never disassemble the battery.
- Never short-circuit battery terminals.
- Never incinerate batteries, for they may explode.
- Do not press and/or bend the terminals, or overheat them.
- Do not mix old and new batteries together, neither use batteries of different types or brands.
- Do not dispose of with household waste.
- Be sure to use the specified charger for battery, and follow the charging instructions correctly.
- Be sure to charge the batteries between the temperatures 0°C/32°F to 45°C/113°F.
- Be sure to position batteries securely, protecting them from abnormal shocks and/or vibration.
- Be sure to keep sufficient space between batteries for ventilation (where possible >10mm).
- Be sure to install batteries in a cool and well ventilated place.
- The surrounding temperature must remain between 20°C/4°F to 50°C/122°F during storage.
- Recharge the batteries at least every 6 months during storage.
- Be sure to consult FirstPower engineers any time you are to use FirstPower VRLA batteries for your products, or preparing your technical specifications of FirstPower VRLA batteries.