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LEOCH *POWER* THE GALAXY

**VRLA-AGM
BATTERIES**

WWW.LEOCH.COM
Stock Code: 00842.HK

- **LP SERIES- GENERAL PURPOSE**
- **LPC SERIES- DEEP CYCLE**
- **LPS SERIES- SOLAR POWER**
- **LPL SERIES- LONG LIFE STANDBY**
- **LPX SERIES- HIGH RATE / UPS**
- **LPF SERIES- FRONT TERMINAL**



Leoch International Technology Limited

FACTORY LAYOUT

Jiangsu Factory



Dongguan Factory



Shenzhen Factory



Zhaoqing Factory



Anhui Factory



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COMPANY INTRODUCTION

Leoch International Technology Limited, founded in 1999, specializes in the research, development, manufacturing and sales of the globally renowned LEOCH brand lead-acid batteries. Leoch is an international new technology corporation launching stock successfully on Hongkong main board (Leoch International 00842.HK). After years of innovation, LEOCH has become a leading manufacturer of lead-acid batteries and the largest lead-acid batteries exporter in China. LEOCH enterprise consists of five production factories located in Shenzhen, Dongguan, Jiangsu, Zhaoqing, Anhui in China, and two abroad in Malaysia and Sri Lanka. It covers an area of nearly 910,000 square meters, with 70 battery production lines and corresponding testing machines, 2 research and development centers in Zhaoqing and Jiangsu. Today, LEOCH has over 11,000 employees, more than 400 experienced researchers and technicians worldwide. LEOCH has mainly produce AGM, Start and Motive Power types, including AGM VRLA battery, Gel battery, ENERPURE batteries, UPS High Rate batteries, Marine batteries, Railway batteries, Start-Stop batteries, OPzV, OPzS, PzB, PzS tubular plate batteries, automotive battery, motorcycle battery, golf cart battery, Scrubber Sweeper batteries, electric vehicle battery. These products are widely used by many different industries, such as telecommunication, power system, radio and television system, railway, solar, UPS, electric vehicles, cars, golf cars, forklifts, emergency lights, security, alarm, gardening tool, baby carrier etc. Annual gross production value exceeds 11 million KVAh.

With a highly qualified R&D team and unparalleled quality manufacturing standards, LEOCH continues to maintain its competitive edge in the industry. LEOCH has sales facilities in the United States, Europe and Southeast Asia, with more than 34 domestic and overseas sales offices. Its worldwide

sales network already covers more than 100 countries and regions, and has a good cooperation partnership with several excellent external operators.

In an endless pursuit of perfection, Leoch International Technology Limited continues to blaze new trails in quality battery production. Leoch International Technology Limited has received many product quality recognitions such as the Global ISO, Europe's IEC and Germany's VdS certifications. Leoch is certified to / by ISO9001: 2000, ISO 14001, the National Battery & Telecommunications Ministries, as well as, the ministries of Power and Information. LEOCH Battery Products have also obtained the CE authentication of the European Union, UL recognition of the USA, PCT authentication of Russia, Kenya's national authentication, China Telecom, China Mobile, China Unicom, Certificate of National Broadcast and television Bureau, Certificate of China Ship's classification Organization etc. LEOCH has also received ISO/TS16949 certification, a requisite certification for supplying to the automobile and motorcycle industries. In essence, LEOCH has achieved many technical breakthroughs and received numerous national patents through its innovative research. Leoch International Technology Limited's mission statement and business model is to produce and sell the most reliable rechargeable batteries for all critical applications for the protection of people and assets while at the same time protecting the environment by maximizing the resource entrusted in our hand. Our reputation is built on the promise that ethical behavior and fair business practices will result in a satisfied and growing customer base. Leoch International Technology Limited prides itself by delivering its promises in a timely and efficient manner. We listen attentively to our customers, and are constantly reviewing our business practices and procedures in order to make changes that will further benefit all our customers.

LEOCH VRLA-AGM BATTERY FEATURES

INTRODUCTION

LEOCH VRLA-AGM Batteries indicate Valve-Regulated Lead-Acid batteries with Absorbed Glass Mat (AGM) separators. Since 1994, LEOCH has made rapid progress. By using the matured technology invented more than half century, LEOCH is now able to design, build and market high quality, long life VRLA-AGM batteries from 2V to 24V, and 0.5AH to 3500AH. LEOCH produces batteries from scratch and is capable of engineering tool and mold upon on customers special requests. LEOCH is now one of the fastest developing lead-acid battery manufacturers in the world.

APPLICATIONS

LEOCH VRLA-AGM Batteries are designed and categorized into six series for different applications as below:

- **LP series, General Purpose Applications:**
 - All Purpose Battery Needs • UPS • EPS • Emergency Light • Signal • Security System • Electronic Equipment
 - DC Power Supply • Tele-communication • Power System • Network Communication
- **LPC series, Deep Cycle Applications:**
 - Electric Tools • Lawn Mowers • Golf Trolleys • Portable Apparatus • Electric Toys • Illumination Light
 - Wheel chairs • Medical Equipments
- **LPS series, Solar / Wind / Hydro Power System Applications:**
 - Green Energy Systems (solar, wind, hydro, etc) • Measurement Stations • Pump Systems • Signal Station
 - Emergency Lighting • Railway Crossing • Traffic Lights • Street Lightening • Lawn Lamp
 - SOS Pillars • Camping • Boats or Buoys • Communication Systems
- **LPL series, Long Life Standby Applications:**
 - UPS • EPS • Emergency Light • Railway Signal • Electronic Apparatus • Communication DC Power
 - Tele-Communication • Power System Communication • Network Communication • Marine
- **LPX series, High Rate Discharging / UPS Applications:**
 - UPS(High rate) • High Power Backup • Starting System • Power Tools • Emergency Lighting • Electric Starting
- **LPF series, Front Terminal / Telecom Applications:**
 - For Standard 19 Inch or 23 Inch Power Cabinets • Network Connection Equipment • UPS
 - Power Station Systems • Railway and Marine Systems

DEFINITIONS OF VRLA-AGM BATTERY

A VRLA-AGM battery is an electric storage lead-acid battery

- Sealed with special compound epoxy and using pressure controlled vent valves.
- Starved electrolyte design - acid solution is absorbed in separators .
- Using a recombination reaction to prevent the escape of hydrogen and oxygen gases.
- Non spillable - can be operated in any position. But, upside-down installation is not recommended.
- Maintenance free. But connections must be retorqued and the batteries should be cleaned periodically.

A VRLA-AGM battery uses recombinant technology. The oxygen produced from the positive plates of the battery is absorbed by the negative plates. This suppresses the generation of hydrogen at the negative plates. The recombination of oxygen and hydrogen leads to Water (H₂O), retaining the electrolyte amount within the battery. Water filling is never required. Battery should never be opened as this would damage the battery with additional oxygen from the air. The warranty will be void if the battery is opened.

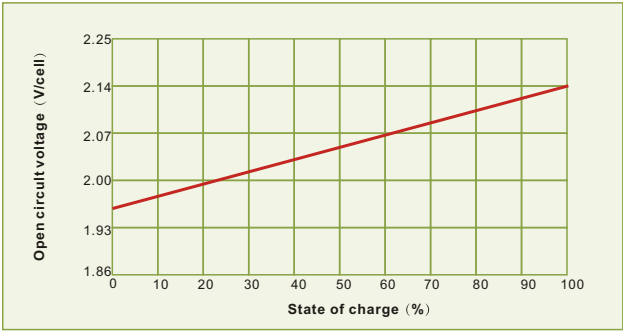
FEATURES

- Maintenance-free, no water adding required.
- Sealed Valve-Regulated
- Spill proof / leak proof
- Deep discharge protection
- Plate grids from lead-calcium alloy, free of antimony
- No corrosion
- Installs vertically or horizontally
- Low gassing (unless overcharged)
- Good cycling and stationary performance
- Good high rate discharges
- Long shelf life
- Rugged and vibration-resistant

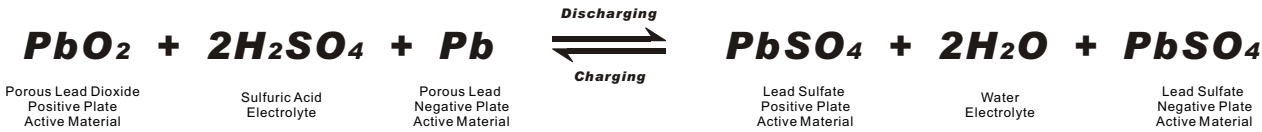
Charge Voltages and Temperature Ranges

Temp (°F)	Boost Charge(V/cell)		Float Charge(V/cell)		Temp (°C)
	Optimum	Maximum	Optimum	Maximum	
≥120	2.23	2.28	2.15	2.18	≥49
110-120	2.27	2.32	2.17	2.22	43-49
100-111	2.28	2.33	2.18	2.23	38-43
90-100	2.30	2.35	2.20	2.25	32-38
80-90	2.32	2.37	2.22	2.27	27-32
70-80	2.35	2.40	2.25	2.30	21-27
60-70	2.38	2.43	2.28	2.33	16-21
50-60	2.40	2.45	2.30	2.35	10-16
40-50	2.43	2.48	2.33	2.38	4-10
30-40	2.46	2.51	2.34	2.39	(-1)-4
20-30	2.49	2.54	2.36	2.41	(-6)-(-1)
10-20	2.53	2.58	2.38	2.43	(-12)-(-6)
≤10	2.58	2.63	2.39	2.44	≤-12

State of charge VS. open circuit voltage

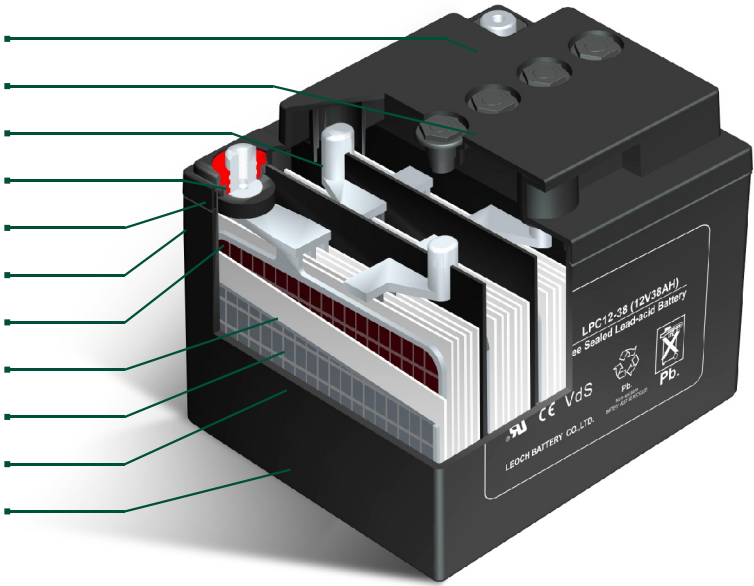


BATTERY OPERATION THEORY



VRLA BATTERY CONSTRUCTION

1. Negative Terminal Post
2. Safe Vent Valve
3. Inter-cell Connector
4. Positive Terminal Post
5. Sealing Compound Epoxy
6. Container Cover
7. Sealing O-Ring
8. Positive Plate
9. AGM Separator
10. Negative Plate
11. Case



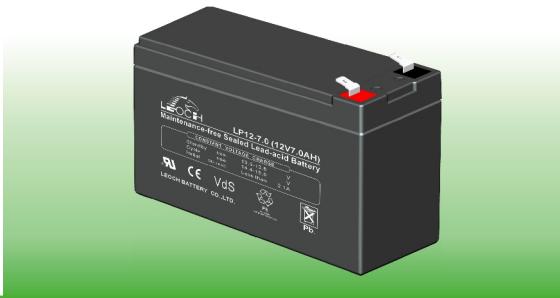
A SPLENDID FUTURE THROUGH THE EFFORTS OF ALL

Unit:mm[inch]

Battery Terminal Options

MAINTENANCE-FREE, SEALED WITH AGM SEPARATOR

LP SERIES -
GENERAL PURPOSE



General Features

- ◆ Using oxygen recombination technology: maintenance-free
- ◆ PbCaSn alloy for plate grids: less gassing, less self-discharging
- ◆ High quality AGM separator: extend cycle life and prevent micro short circuit
- ◆ ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)
- ◆ High purity raw material: ensure low self discharge rate
- ◆ Silver-coated copper terminals (T1, T2 terminal), brass insert terminals and lead terminals improve the electric conductivity

LP Models and Parameters (Small size)

Typical Applications

- ◆ All purpose ◆Uninterruptable Power Supply (UPS) ◆Electric Power System (EPS)
- ◆ Emergency backup power supply ◆ Emergency light ◆ Railway signal ◆ Aircraft signal
- ◆ Alarm and security system ◆ Electronic apparatus and equipment ◆ Communication power supply
- ◆ DC power supply ◆ Auto control system

Model	Nominal Voltage (V)	Rated Capacity (Ah)				Approx Dimension								Approx Weight		Terminal type
						Length		Width		Height		Total Height				
		20HR	10HR	5HR	1HR	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LP2-4.0	2	4.00	3.72	3.36	2.43	48	1.89	25	0.98	101	3.98	107	4.21	0.28	0.62	T1
LP4-0.4	4	0.40	0.37	0.335	0.243	35	1.38	22	0.87	40	1.57	45	1.77	0.06	0.132	/
LP4-0.7	4	0.70	0.65	0.59	0.425	35	1.38	22	0.87	64	2.52	68.5	2.7	0.100	0.22	/
LP4-1.2	4	1.20	1.12	1.01	0.728	35	1.38	22	0.87	92	3.62	97	3.82	0.150	0.331	/
LP4-3.5	4	3.50	3.26	2.94	2.12	90	3.54	34	1.34	59	2.32	65	2.56	0.45	0.99	T1
LP4-4.5	4	4.50	4.19	3.78	2.73	52.5	2.07	48	1.89	94	3.70	100	3.94	0.60	1.32	T1/T2
LP4-5.0	4	5.00	4.65	4.20	3.04	91	3.58	50	1.97	74	2.91	74	2.91	0.66	1.46	T1/T2
LP4-8.0	4	8.00	7.44	6.80	5.02	91	3.58	50	1.97	101	3.98	101	3.98	0.97	2.14	T2
LP4-10	4	10.0	9.30	8.50	6.28	101.5	4.00	50	1.97	94	3.70	100	3.94	1.14	2.51	T2
LP4-20	4	20.0	18.6	17.0	12.6	149	5.87	43	1.69	154	6.06	160	6.30	2.20	4.85	T2/T3
LP6-0.5	6	0.50	0.47	0.42	0.304	57	2.24	14	0.55	50	1.97	52	2.05	0.10	0.22	/
LP6-1.0	6	1.00	0.93	0.84	0.607	51	2.01	42	1.65	51	2.01	57	2.24	0.25	0.55	T1
LP6-1.2	6	1.20	1.12	1.01	0.728	97	3.82	24	0.94	51.5	2.03	57.5	2.26	0.29	0.64	T1
LP6-2.0	6	2.00	1.86	1.68	1.21	43	1.69	37	1.46	76	2.99	76	2.99	0.34	0.75	/
LP6-2.8	6	2.80	2.60	2.35	1.7	66	2.60	33	1.30	97	3.82	103	4.06	0.57	1.26	T1
LP6-3.2	6	3.20	2.98	2.69	1.94	134	5.28	34	1.34	60	2.36	66	2.60	0.67	1.48	T1
LP6-4.0	6	4.00	3.72	3.36	2.43	70	2.76	47	1.85	100	3.94	106	4.17	0.74	1.63	T1/T4
LP6-4.5	6	4.50	4.19	3.78	2.73	70	2.76	47	1.85	100	3.94	106	4.17	0.81	1.79	T1
LP6-4.5S	6	4.50	4.19	3.78	2.73	67	2.64	67	2.64	96	3.78	109	4.29	0.81	1.79	S
LP6-5.0	6	5.00	4.65	4.20	3.04	169	6.65	35	1.38	70	2.76	74	2.91	0.95	2.09	T1
LP6-5.4	6	5.40	5.02	4.53	3.28	70	2.76	47	1.85	100	3.94	106	4.17	0.80	1.76	T1

Note:model number followed with H-tall version and L-long version

LP Models and Parameters Continued (Small size)

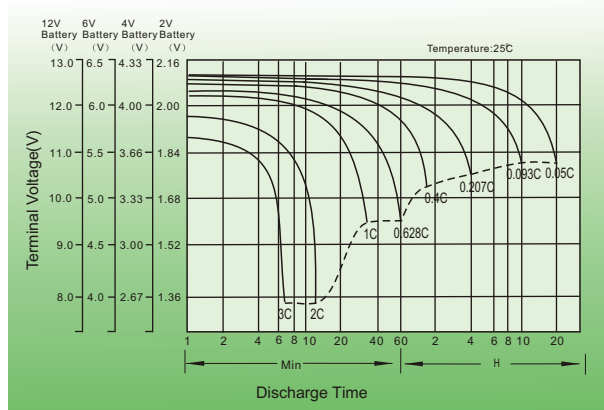
Model	Nominal Voltage (V)	Rated Capacity (Ah)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LP6-6.0	6	6.00	5.58	5.05	3.64	70	2.76	47	1.85	100	3.94	106	4.17	0.88	1.94	T1
LP6-6.0C	6	6.00	5.58	5.05	3.64	70	2.76	47	1.85	100	3.94	105	4.13	0.88	1.94	T4
LP6-7.0	6	7.00	6.51	5.95	4.40	151	5.94	34	1.34	94	3.7	100	3.94	1.1	2.43	T1/T2
LP6-7.2	6	7.20	6.7	6.12	4.52	151	5.94	34	1.34	94	3.7	100	3.94	1.2	2.65	T1/T2
LP6-7.5	6	7.50	6.98	6.40	4.71	151	5.94	34	1.34	94	3.7	100	3.94	1.26	2.78	T1/T2
LP6-7.8	6	7.80	7.25	6.63	4.90	151	5.94	34	1.34	94	3.7	100	3.94	1.28	2.82	T1/T2
LP6-8.5	6	8.50	7.91	7.25	5.34	151	5.94	34	1.34	94	3.7	100	3.94	1.20	2.65	T1/T2
LP6-8.5H	6	8.50	7.91	7.25	5.34	98	3.86	56	2.20	118	4.65	120	4.72	1.52	3.35	T1/T2
LP6-10	6	10.0	9.3	8.50	6.28	151	5.94	51	2.01	94	3.7	100	3.94	1.57	3.46	T1/T2
LP6-12	6	12.0	11.2	10.20	7.54	151	5.94	51	2.01	94	3.7	100	3.94	1.8	3.97	T1/T2
LP6-13	6	13.0	12.09	11.05	8.16	108	4.25	70	2.76	140	5.51	140	5.51	2.24	4.94	NT1/PT2
LP6-14	6	14.0	13.0	11.9	8.79	151	5.94	51	2.01	94	3.7	100	3.94	2.05	4.52	T1/T2
LP6-20	6	20.0	18.6	17.0	12.6	157	6.18	83	3.27	125	4.92	125	4.92	3.21	7.08	T3
LP6-36	6	36.0	33.5	30.6	22.6	161	6.34	87	3.43	163	6.42	169	6.65	5.5	12.1	T2/T3
LP8-3.2	8	3.20	2.98	2.69	1.94	134	5.28	36.5	1.44	63	2.48	69	2.72	0.75	1.65	T1
LP12-0.8	12	0.80	0.74	0.67	0.486	96	3.78	25	0.98	62	2.44	62	2.44	0.35	0.77	/
LP12-1.2	12	1.20	1.12	1.01	0.728	97	3.82	43	1.69	52	2.05	58	2.28	0.57	1.26	T1
LP12-1.9	12	1.90	1.77	1.60	1.15	178	7.01	35	1.38	60	2.36	66	2.6	0.87	1.92	T1
LP12-2.0NP	12	2.00	1.86	1.68	1.21	151	5.94	20	0.79	89	3.5	89	3.5	0.68	1.5	/
LP12-2.0C1	12	2.00	1.86	1.68	1.21	143	5.63	24	0.94	65	2.56	65	2.56	0.57	1.26	/
LP12-2.2	12	2.20	2.05	1.85	1.34	70	2.76	48	1.89	98	3.86	104	4.09	0.8	1.76	T1
LP12-2.3	12	2.30	2.14	1.93	1.40	178	7.01	35	1.38	60	2.36	66	2.6	0.96	2.12	T1
LP12-2.3C	12	2.30	2.14	1.93	1.40	182	7.17	24	0.94	61	2.4	61	2.4	0.78	1.72	/
LP12-2.8	12	2.80	2.6	2.35	1.70	132	5.2	33	1.30	98	3.86	104	4.09	1.18	2.6	T1
LP12-2.9	12	2.90	2.7	2.44	1.76	79	3.11	56	2.20	99	3.9	105	4.13	1.1	2.43	T1
LP12-3.2	12	3.20	2.98	2.69	1.94	134	5.28	67	2.64	60.5	2.38	66.5	2.62	1.35	2.98	T1
LP12-4.0L	12	4.00	3.72	3.36	2.43	195	7.68	47	1.85	70	2.76	76	2.99	1.6	3.53	T1
LP12-4.0	12	4.00	3.72	3.36	2.43	90	3.54	70	2.76	101	3.98	107	4.21	1.45	3.2	T1
LP12-4.5	12	4.50	4.19	3.78	2.73	90	3.54	70	2.76	101	3.98	107	4.21	1.48	3.26	T1
LP12-5.0	12	5.00	4.65	4.20	3.04	151	5.94	53	2.09	93	3.66	99	3.9	1.75	3.86	T1/T2
LP12-5.4	12	5.40	5	4.54	3.28	90	3.54	70	2.76	101	3.98	107	4.21	1.65	3.64	T1
LP12-6.0	12	6.00	5.58	5.05	3.64	90	3.54	70	2.76	101	3.98	107	4.21	1.77	3.90	T1/T2
LP12-6.0H	12	6.00	5.58	5.05	3.64	140	5.51	48	1.89	102	4.02	103	4.06	1.61	3.55	NT1/PT2
LP12-6.5	12	6.50	6.05	5.55	4.08	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.06	4.54	T1/T2
LP12-7.0	12	7.00	6.53	5.80	4.26	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.18	4.81	T1/T2
LP12-7.2	12	7.20	6.72	6.00	4.38	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.35	5.18	T1/T2
LP12-7.5	12	7.50	7.00	6.25	4.56	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.45	5.4	T1/T2
LP12-7.8	12	7.80	7.28	6.50	4.74	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.50	5.51	T1/T2
LP12-8.5	12	8.50	7.93	7.15	5.31	151	5.94	65	2.56	93.5	3.68	99.0	3.90	2.45	5.4	T1/T2
LP12-9.0	12	9.0	8.31	7.55	6.24	151	5.9	65	2.6	93.5	3.68	99.0	3.90	2.66	5.87	T1/T2
LP12-10	12	10.0	9.3	8.5	6.28	151	5.94	98	3.86	95	3.74	101	3.98	3.25	7.17	T1/T2
LP12-10H	12	10.0	9.3	8.5	6.28	151	5.94	65	2.56	111	4.37	117	4.61	3.20	7.06	T1/T2
LP12-12	12	12.0	11.2	10.2	7.54	151	5.94	98	3.86	95	3.74	101	3.98	3.50	7.72	T1/T2
LP12-14	12	14.0	13.0	11.9	8.79	151	5.94	98	3.86	95	3.74	101	3.98	4.05	8.93	T1/T2
LP12-15	12	15.0	14.0	12.8	9.42	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	4.70	10.4	Lead Terminal
LP12-18	12	18.0	16.7	15.3	11.3	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	5.40	11.9	T3/T12
LP12-20	12	20.0	18.6	17	12.6	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	5.78	12.74	T3
LP12-24	12	24.0	22.3	20.4	15.07	166	6.54	175	6.89	125	4.92	125	4.92	7.2	15.9	T3/T12
LP12-24H	12	24.0	22.3	20.4	15.07	165	6.5	125	4.92	175	6.89	175	6.89	8.7	19.2	T10/T12
LP12-26	12	26.0	24.2	22.1	16.3	166	6.54	175	6.89	125	4.92	125	4.92	8	17.6	T3/T12

Specifications subject to change without notice.

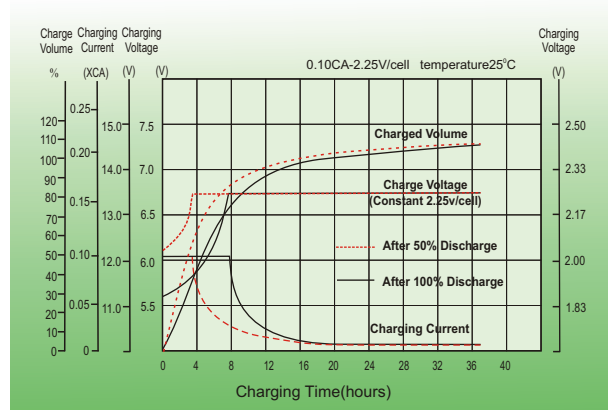
Model	Nominal Voltage (V)	Rated Capacity(Ah)				Approx Dimension								Approx Weight		Terminal type
						Length		Width		Height		Total Height				
		20HR	10HR	5HR	1HR	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LP12-28	12	28.0	26.0	23.8	17.6	166	6.54	175	6.89	125	4.92	125	4.92	8.1	17.9	T3/T12
LP12-28H	12	28.0	26.0	23.8	17.6	165	6.5	125	4.92	175	6.89	175	6.89	9.5	20.9	T3/T10
LP12-30	12	30.0	27.9	25.5	18.8	166	6.54	175	6.89	125	4.92	125	4.92	8.6	19.0	T12
LP12-30H	12	30.0	27.9	25.5	18.8	195	7.68	130	5.12	164	6.46	178	7.01	9.7	21.4	T5
LP12-33	12	33.0	30.7	28.1	20.7	195	7.68	130	5.12	164	6.46	180	7.09	10.5	23.2	T5
LP12-35	12	35.0	32.6	29.8	22.0	195	7.68	130	5.12	164	6.46	178	7.01	11.2	24.7	T5/T6
LP24-1.3	24	1.30	1.21	1.09	0.789	194	7.64	44	1.73	52	2.05	58	2.28	1.10	2.43	T1
LP24-3.5	24	3.50	3.26	2.94	2.12	185	7.28	73	2.87	70	2.76	70	2.76	2.60	5.73	/
LP24-4.0	24	4.00	3.72	3.36	2.43	300	11.8	67	2.64	62	2.44	68	2.68	3.10	6.84	T1/T2

LP Performance Characteristics (Small size)

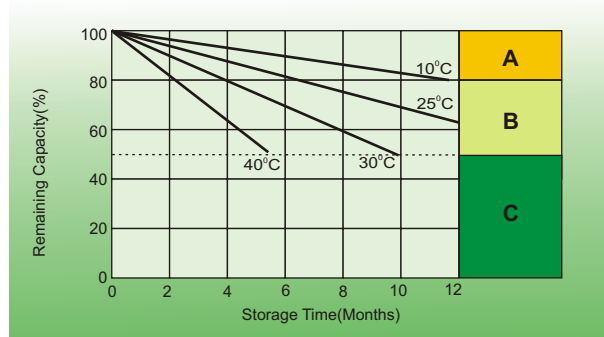
DISCHARGE CHARACTERISTICS



CHARGING CHARACTERISTICS(STANDBY USE)

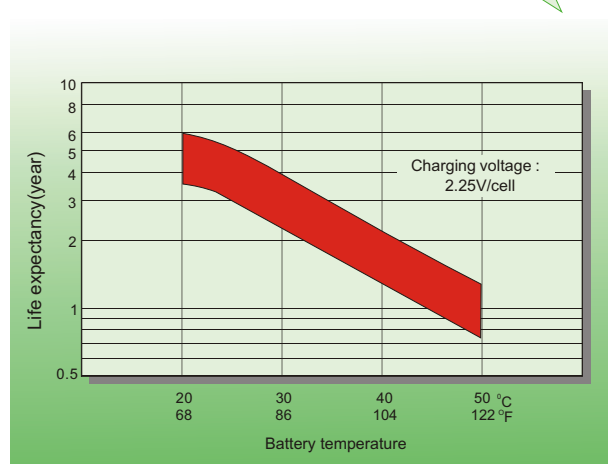


SELF DISCHARGE CHARACTERISTICS

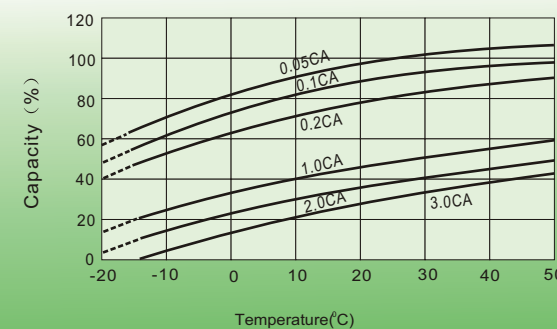


- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging ways below:
1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
3. Charged for 8-10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

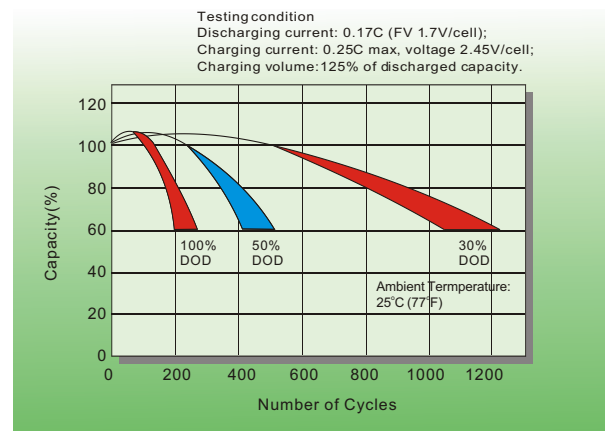
EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



CYCLE SERVICE LIFE IN RELATION TO THE DEPTH OF DISCHARGE



LP Models and Parameters (Middle size)

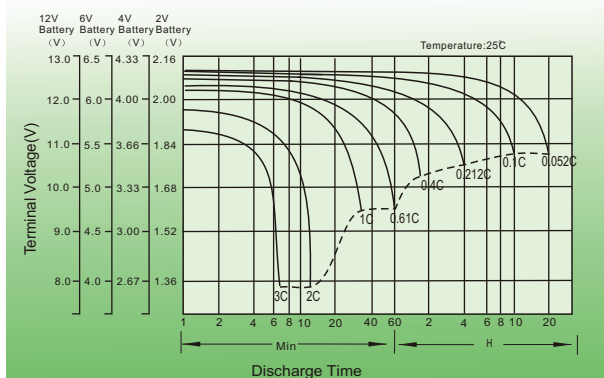
Typical Applications

- ◆ All purpose ◆ Uninterruptable Power Supply (UPS) ◆ Electric Power System (EPS)
- ◆ Emergency backup power supply ◆ Emergency light ◆ Railway signal ◆ Aircraft signal
- ◆ Alarm and security system ◆ Electronic apparatus and equipment ◆ Communication power supply
- ◆ DC power supply ◆ Auto control system

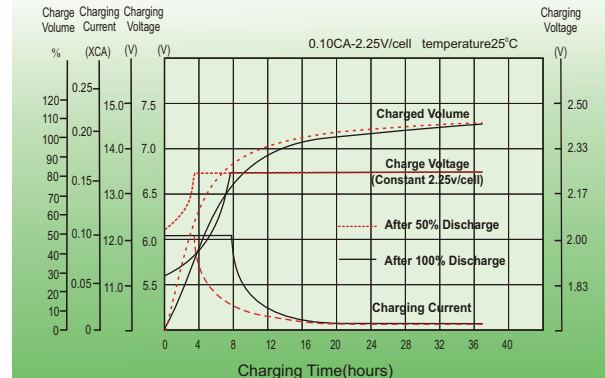
Model	Nominal Voltage (V)	Rated Capacity (Ah)				Approx Dimension								Approx Weight		Termina type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LP6-60	6	62.4	60.0	51.5	36.6	185	7.28	112	4.41	205	8.07	205	8.07	9.1	20.07	T2/T3
LP6-100	6	104.0	100.0	86.0	61.0	195	7.68	170	6.69	206.5	8.13	212.5	8.37	15.6	34.40	T6
LP6-120	6	124.8	120.0	103.0	73.2	280	11.02	128	5.04	203	7.99	203	7.99	16.8	37.04	T6
LP6-150	6	156.0	150.0	129.0	91.5	260	10.24	180	7.09	247	9.72	253	9.96	21.2	46.75	T7
LP6-200	6	210.0	200.0	172.0	122.0	306	12.05	168	6.61	222	8.74	228	8.98	28.2	62.2	T8
LP12-38	12	40.0	38.0	32.7	23.2	197	7.76	165	6.50	170	6.69	170	6.69	12.2	26.90	T6/T12
LP12-40	12	40.0	38.5	33.1	23.5	255	10.04	97	3.82	203	7.99	203	7.99	12.5	27.56	T7
LP12-45	12	46.8	45.0	38.7	27.5	197	7.76	165	6.50	170	6.69	170	6.69	14.2	31.31	T6/T12
LP12-50	12	52.0	50.0	43.0	30.5	257	10.12	132	5.20	200	7.87	200	7.87	16.0	35.28	T6
LP12-55	12	57.2	55.0	47.3	33.6	229	9.00	138	5.43	205	8.07	226	8.89	16.5	36.38	T6/T9/T14
LP12-60	12	62.4	60.0	51.5	36.6	259	10.2	168	6.61	208	8.19	214	8.43	18.5	40.79	T6/T14
LP12-65	12	65.0	62.1	53.6	37.5	348	13.70	167	6.57	178	7.01	178	7.01	19.2	42.34	T6
LP12-70	12	72.8	70.0	60	42.7	348	13.70	167	6.57	178	7.01	178	7.01	21.6	47.63	T6
LP12-75	12	78.0	75.0	64.5	45.8	259	10.20	168	6.61	208	8.19	214	8.43	22.3	49.17	T6/T9
LP12-80	12	83.2	80.0	69.0	48.8	259	10.20	168	6.61	208	8.19	214	8.43	24.0	52.92	T6
LP12-90	12	93.6	90.0	77.5	54.9	330	12.99	173	6.81	212	8.35	220	8.66	28.0	61.74	T11
LP12-100	12	104.0	100.0	86	61.0	330	12.99	173	6.81	212	8.35	220	8.66	30.4	67.03	T11
LP12-120	12	124.8	120.0	103.2	73.2	408	16.06	177	6.97	225	8.86	225	8.86	35.0	77.18	T11
LP12-135	12	140.4	135.0	116	82.4	345	13.6	172	6.77	274	10.8	280	11.02	41.2	90.85	T11
LP12-150	12	156.0	150.0	129.0	91.5	483	19	170	6.69	238.5	9.39	238.5	9.39	43.5	95.92	T11
LP12-180	12	187.2	180.0	154.8	109.8	532	20.9	207	8.15	214	8.43	220	8.661	52.8	116.4	T11
LP12-200	12	208.0	200.0	172.0	122.0	522	20.55	240	9.45	218	8.58	224	8.82	61.0	134.5	T11
LP12-250	12	260.0	250.0	215.0	152.5	522	20.55	268	10.55	220	8.66	226	8.90	73.0	161.0	T11

LP Performance Characteristics (Middle size)

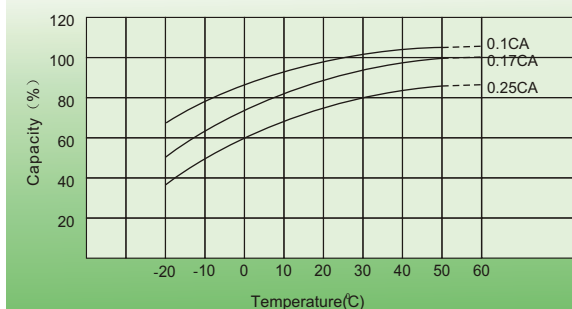
DISCHARGE CHARACTERISTICS



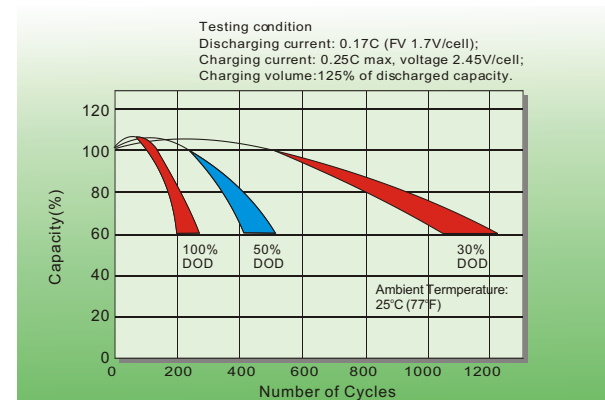
CHARGING CHARACTERISTICS(STANDBY USE)



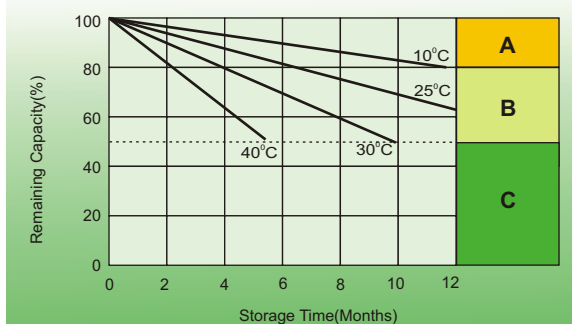
TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



CYCLE SERVICE LIFE IN RELATION TO THE DEPTH OF DISCHARGE



SELF DISCHARGE CHARACTERISTICS

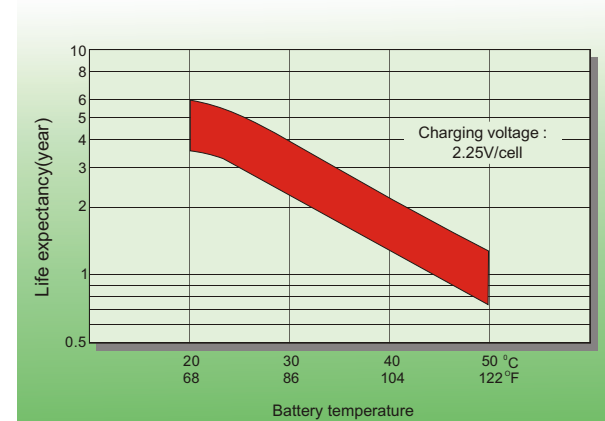


A No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)

B Supplementary charge required before use. Optional charging ways below:
1.Charged for above 3days at limited current 0.25CA and constant voltage 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant voltage 2.45V/cell.
3.Charged for 8-10hours at limited current 0.05CA.

C Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



LP II Models and Parameters (2V Series)

Typical Applications

- ◆ Tele-communication central station (wired or cellular)
- ◆ Power system communication, military communication, etc.
- ◆ Network communication including: data transmission, television signal transmission, etc.
- ◆ Uninterruptable Power System (UPS- for Telecom)

Model	Nominal Voltage (V)	Rated Capacity (Ah)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
						1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	
LP2-65	2	68.2	65.0	56.5	39.5	170	6.69	72	2.83	205	8.07	212	8.35	4.70	10.4	T6
LP2-72	2	75.6	72.0	62.5	43.7	170	6.69	72	2.83	205	8.07	212	8.35	5.50	12.1	T6
LP2-100	2	105.0	100.0	87.0	60.7	170	6.69	72	2.83	205	8.07	212	8.35	6.00	13.2	T6
LP2-120	2	126.0	120.0	104.5	72.8	170	6.69	98	3.86	205	8.07	212	8.35	7.60	16.8	T7
LP2-130	2	136.6	130.0	113.0	78.9	170	6.69	98	3.86	205	8.07	212	8.35	8.00	17.6	T7
LP2-150	2	157.6	150.0	130.5	91.1	170	6.69	98	3.86	205	8.07	212	8.35	8.50	18.7	T7
LP2-200	2	210.0	200.0	174.0	121.4	170	6.69	110	4.33	328	12.9	350	13.78	12.9	28.4	T11
LP2-250	2	262.0	250.0	217.5	151.8	170	6.69	110	4.33	328	12.9	350	13.78	14	30.9	T11
LP2-300	2	316.0	300.0	261.0	182.1	170	6.69	150	5.91	328	12.9	350	13.78	17.9	39.5	T11
LP2-350	2	368.0	350.0	304.5	212.5	170	6.69	150	5.91	328	12.9	350	13.78	19	41.9	T11
LP2-400	2	420.0	400.0	348.0	242.8	210	8.27	175	6.89	330	13.0	350	13.78	24.3	53.6	T11
LP2-450	2	472.0	450.0	391.5	273.2	210	8.27	175	6.89	330	13.0	350	13.78	27	59.5	T11
LP2-500	2	526.0	500.0	435.0	303.5	240	9.45	175	6.89	330	13.0	350	13.78	29.3	64.6	T11
LP2-600	2	630.0	600.0	522.0	364.2	300	11.81	175	6.89	330	13.0	350	13.78	35.5	78.3	T11
LP2-700	2	736.0	700.0	609.0	424.9	300	11.81	175	6.89	330	13.0	350	13.78	38.1	84	T11
LP2-800	2	840.0	800.0	696.0	485.6	410	16.14	175	6.89	330	13.0	350	13.78	50.1	110.5	T11
LP2-1000	2	1050.0	1000.0	870.0	607.0	475	18.70	175	6.89	328	12.9	350	13.78	57.0	125.7	T11
LP2-1200	2	1260.0	1200.0	1044.0	728.4	475	18.70	175	6.89	328	12.9	350	13.78	63.7	140.5	T11
LP2-1500	2	1576.0	1500.0	1305.0	910.5	403	15.87	354	13.94	339	13.4	349	13.74	94.0	207.3	T11
LP2-1800	2	1890.0	1800.0	1566.0	1092.6	403	15.87	354	13.94	339	13.4	349	13.74	101.0	222.7	T11
LP2-2000	2	2100.0	2000.0	1740.0	1214.0	490	19.29	350	13.78	339	13.4	349	13.74	119.0	262.4	T11
LP2-2500	2	2626.0	2500.0	2175.0	1517.5	490	19.29	350	13.78	339	13.4	349	13.74	132.0	291.1	T11
LP2-3000	2	3150.0	3000.0	2610.0	1821.0	709	27.91	350	13.78	337	13.3	347	13.66	181.0	399.1	T11

UPS



Telecom



Power System

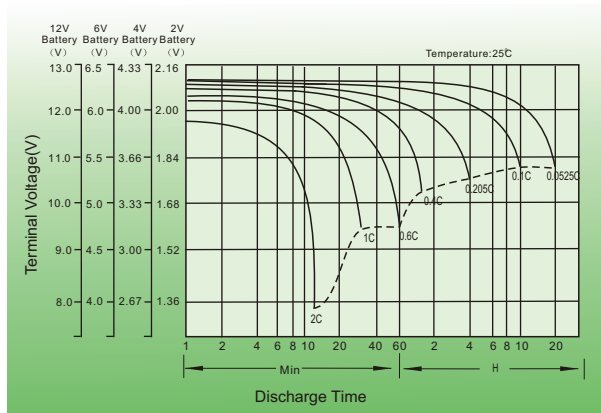


Railway Signal

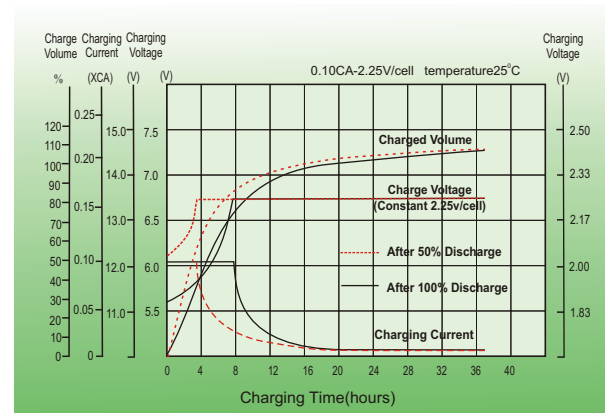


LP II Performance Characteristics

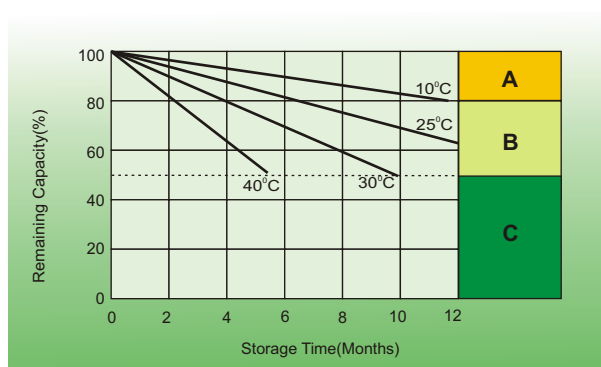
DISCHARGE CHARACTERISTICS



CHARGING CHARACTERISTICS(STANDBY USE)



SELF DISCHARGE CHARACTERISTICS

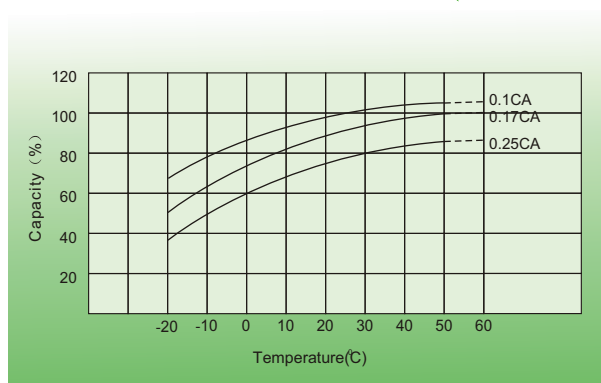


A No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required)

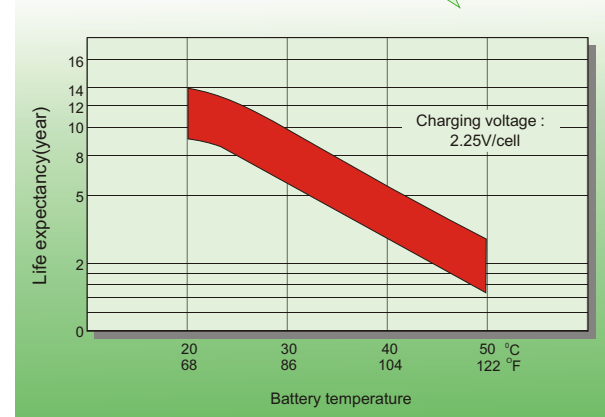
B Supplementary charge required before use. Optional charging ways below:
1.Charged for above 3days at limited current 0.25CA and constant voltage 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant voltage 2.45V/cell.
3.Charged for 8~10hours at limited current 0.05CA.

C Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

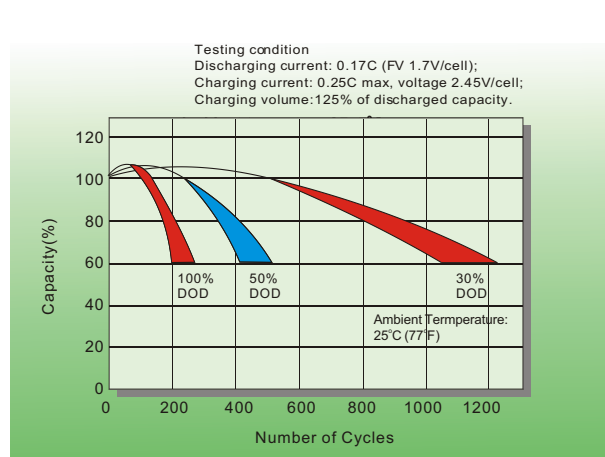
TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



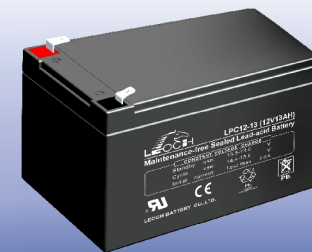
EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



CYCLE SERVICE LIFE IN RELATION TO THE DEPTH OF DISCHARGE



LPC SERIES - DEEP CYCLE



General Features

- Using oxygen recombination technology: maintenance-free
- Special grid alloy: less gassing, less self-discharging
- For longer cycle life: special paste formula, over dimensioned negative plate, optimised manufacturing process, additives for deep discharge
- Thermal management system (optional)
- Special anti-vibration design (optional)
- High quality AGM separator: extend cycle life and prevent micro short circuit
- ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)

LPC Models and Parameters

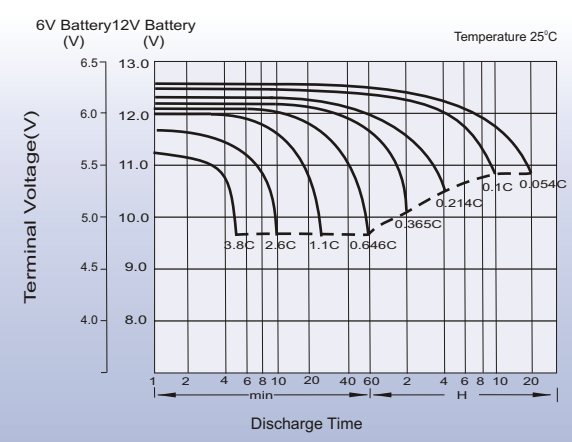
Typical Applications

- Electric tools
- Vehicle in place of walking
- Lawn mowers
- Golf trolleys and golf cart
- Portable apparatus, lights and instruments;
- Electric toys
- Illumination light
- Fire alarms
- Portable power
- Wheelchairs
- Medical equipments.

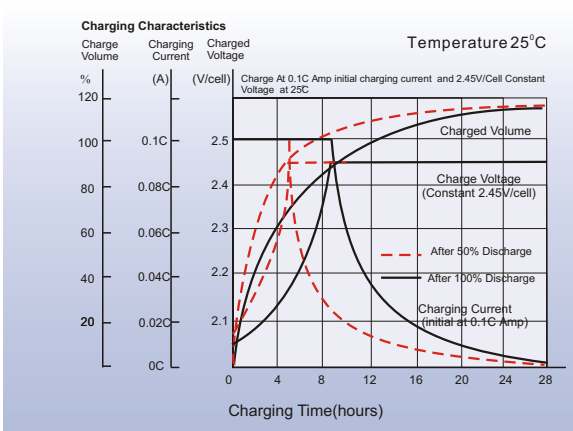
Model	Nominal Voltage (V)	Rated Capacity(AH)	Approx Dimension								Approx Weight		Terminal type
		10HR	Length		Width		Height		Total Height				
		1.80V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPC6-5.6	6	5.6	70	2.76	47	1.85	100	3.94	106	4.17	0.88	1.94	T1/T2
LPC6-13	6	13.0	151	5.94	51	2.01	94	3.7	100	3.94	2.05	4.52	T1/T2
LPC12-3.5	12	3.2	134	5.28	67	2.64	60.5	2.38	66.5	2.62	1.35	2.98	T1
LPC12-5.6	12	5.6	90	3.54	70	2.76	101	3.98	107	4.21	1.77	3.90	T1/T2
LPC12-7.2	12	7.2	151	5.94	65	2.56	93.5	3.68	99	3.9	2.5	5.51	T1/T2
LPC12-8.0	12	8.0	151	5.94	65	2.56	93.5	3.68	99	3.9	2.45	5.4	T1/T2
LPC12-13	12	13.0	151.5	5.96	99.5	3.92	97	3.82	100	3.94	4.30	9.48	T1/T2/T15
LPC12-18	12	18.0	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	6.05	13.3	T3/T12
LPC12-20	12	20.0	181	7.13	76.5	3.01	170.5	6.71	170.5	6.71	6.90	15.2	T3/T12/T15
LPC12-24	12	24.0	166.5	6.56	175	6.89	125	4.92	125	4.92	8.70	19.2	T12
LPC12-24H	12	24.0	165	6.5	125	4.92	175	6.89	175	6.89	9.50	20.9	T12/T3
LPC12-26	12	26.0	166	6.54	175	6.89	125	4.92	125	4.92	9.35	20.6	T3
LPC12-33	12	33.0	195	7.68	130	5.12	164	6.46	182	7.17	11.65	25.7	T5/T6/T12
LPC12-38	12	38.0	197	7.76	165	6.5	170	6.69	170	6.69	14.2	31.3	T6
LPC12-50	12	50.0	257	10.12	132	5.2	200	7.87	200	7.87	18.1	39.9	T6
LPC12-55	12	55.0	228	8.98	137	5.39	210	8.27	230	9.06	17.7	39.0	T6/T9
LPC12-75	12	75.0	259	10.2	168	6.61	208	8.19	214	8.43	22.3	49.2	T6/T14
LPC12-100	12	100.0	330	12.99	173	6.81	212	8.35	220	8.66	30.4	67.0	T11
LPC12-120	12	120.0	408	16.06	177	6.97	225	8.86	225	8.86	37.6	82.9	T11
LPC12-150	12	150.0	483	19.02	170	6.69	238.5	9.39	238.5	9.39	43.5	95.9	T11
LPC12-200	12	200.0	522	20.55	240	9.45	218	8.58	224	8.82	61.5	135.6	T11

LPC Performance Characteristics

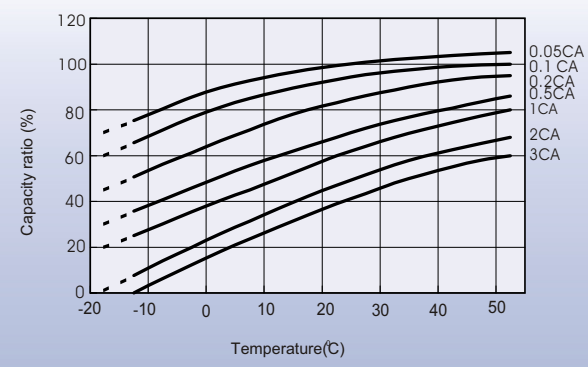
DISCHARGE CHARACTERISTICS



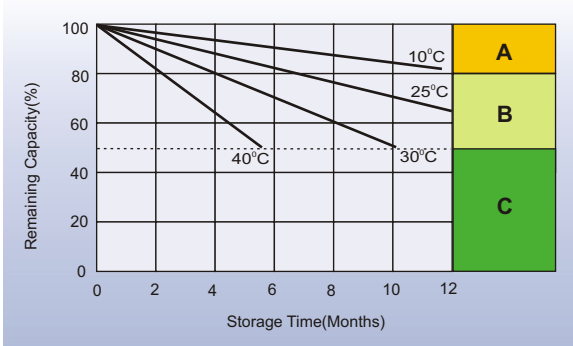
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY

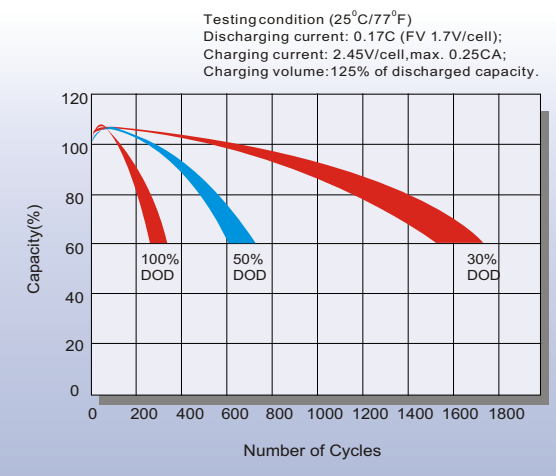


SELF DISCHARGE CHARACTERISTICS



- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. Optional charging way as below:
1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant voltage 2.45V/cell.
3.Charged for 8-10hours at limited current 0.05CA .
- C** Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this is reached.

LPC SERIES CYCLE SERVICE LIFE IN RELATION TO DEPTH OF DISCHARGE



LPS SERIES - SOLAR POWER



General Features

- ◆ Good cyclic property. Enhanced overcharge endurance and overdischarge recovery property
- ◆ High purity raw material: ensure low self discharge rate
- ◆ Using oxygen recombination technology: maintenance-free
- ◆ Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- ◆ ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)
- ◆ Unique plate group configuration, high quality AGM separator and battery management system ensure battery with a longer service life
- ◆ Special vent valve design: control water losing, prevent air and spark going inside

LPS Models and Parameters (6V, 12V Series)

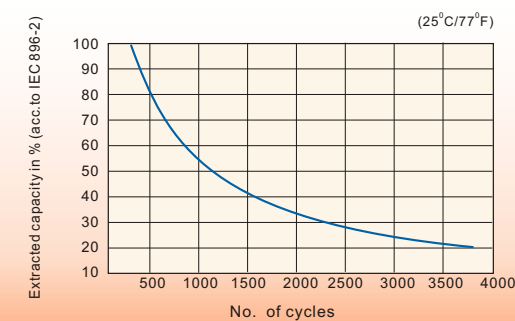
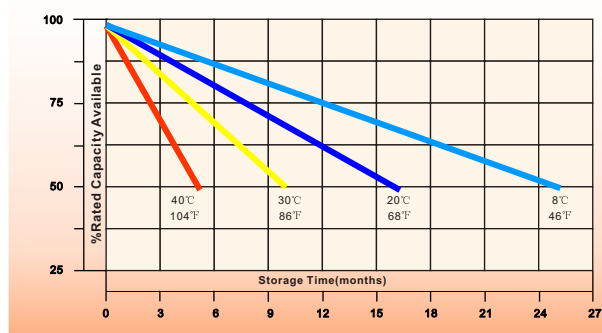
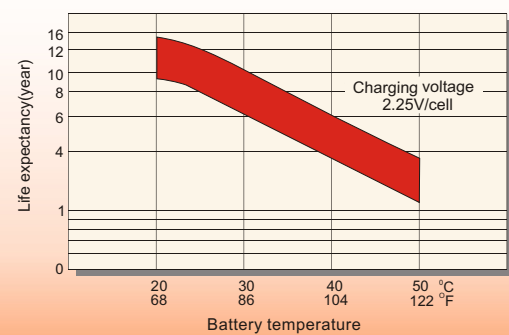
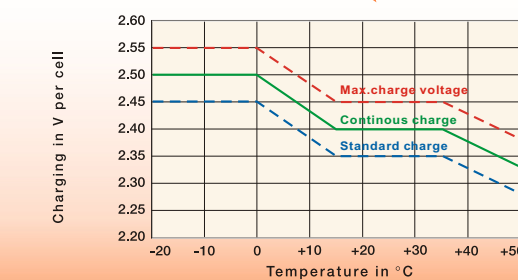
Typical Applications

- ◆ Green energy systems (solar, wind, hydro, etc)
- ◆ Solar power stations
- ◆ Telecommunications installations
- ◆ Measurement stations
- ◆ Pump systems
- ◆ Signal station
- ◆ Survey and Mapping system
- ◆ Emergency lighting
- ◆ Railway crossing
- ◆ Traffic lights
- ◆ Street lightening
- ◆ Lawn lamp
- ◆ Street signs
- ◆ SOS pillars
- ◆ Alarm installations
- ◆ Weekend cottage camping
- ◆ Caravans
- ◆ Boats or buoys

Model	Nominal Voltage (V)	Rated Capacity (AH)					Approx Dimension								Approx Weight		Terminal type
		100HR	20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPS12-7.5	12	7.5	6.84	6.52	5.80	3.98	151	5.94	65	2.56	93.5	3.68	99	3.90	2.45	5.40	T1/T2
LPS12-18	12	18.4	16.8	16.0	14.2	9.76	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	5.70	12.57	T3/T12
LPS12-20	12	20.7	18.9	18.0	16	11.0	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	6.00	13.2	T3
LPS12-30	12	30.0	27.4	26.0	23.1	15.9	165	6.50	125	4.92	175	6.89	175	6.89	9.50	20.9	T12
LPS12-36	12	36.8	33.6	32.0	28.5	19.5	195	7.68	130	5.12	164	6.46	178	7.01	11.2	24.7	T5
LPS6-115	6	115	105	100.0	87.0	60.8	195	7.68	170	6.69	206.5	8.13	212.5	8.37	16.5	36.4	T6
LPS6-170	6	173	157.6	150.0	131.0	91.1	260	10.24	180	7.09	247	9.72	253	9.96	23.0	50.7	T7
LPS6-230	6	230	210	200.0	174.5	121.5	322	12.68	178	7.01	228	8.98	234	9.21	35.0	77.2	T11
LPS12-40	12	43.7	40	38.0	33.2	23.1	197	7.76	165	6.50	170	6.69	170	6.69	13.2	29.1	T6
LPS12-45FT	12	46	42	40.0	34.9	24.3	277	10.91	106	4.17	222	8.74	222	8.74	15.5	34.2	T6
LPS12-50	12	50	45	42.9	37.4	26.1	197	7.76	165	6.50	170	6.69	170	6.69	14.5	32.0	T6
LPS12-60FT	12	63.3	57.8	55.0	48	33.4	277	10.91	106	4.17	222	8.74	222	8.74	18.0	39.7	T6
LPS12-75	12	74.8	68.2	65.0	56.7	39.5	348	13.70	167	6.57	178	7.01	178	7.01	21	46.3	T6

Model	Nominal Voltage (V)	Rated Capacity (AH)					Approx Dimension								Approx Weight		Terminal type
							Length		Width		Height		Total Height				
		100HR	20HR	10HR	5HR	1HR	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPS12-85FT	12	86.3	78.7	75.0	65.5	45.6	564	22.20	114	4.49	187	7.36	187	7.36	26.0	57.3	T6
LPS12-85	12	86.3	78.7	75.0	65.5	45.6	259	10.20	168	6.61	208	8.19	214	8.43	25.0	55.1	T6
LPS12-100FT	12	103.5	94.5	90.0	78.5	54.7	508	20.00	110	4.33	238.5	9.39	238.5	9.39	32.0	70.6	T13
LPS12-115	12	110.0	100	95.2	83.0	57.9	305	12.01	168	6.61	207	8.15	229	9.02	30.6	67.5	T14/T6
LPS12-115FT	12	115.0	105	100.0	87.0	60.8	508	20.00	110	4.33	238.5	9.39	238.5	9.39	35.0	77.2	T13
LPS12-135	12	138.0	126	120.0	104.5	72.9	408	16.06	177	6.97	225	8.86	225	8.86	37.6	82.9	T11
LPS12-145FT	12	143.8	131.3	125.0	109.1	75.9	551	21.69	110	4.33	287	11.30	287	11.30	41.5	91.5	T6
LPS12-160	12	161.0	147	140.0	122.2	85.1	345	13.58	172	6.77	274	10.79	280	11.02	45.5	100.3	T11
LPS12-170FT	12	173	157.6	150.0	131	91.1	551	21.69	110	4.33	287	11.30	287	11.30	46.4	102.3	T6
LPS12-230	12	230.0	210	200.0	174.5	121.5	522	20.55	240	9.45	218	8.58	224	8.82	65	143.3	T11
LPS12-285	12	287.5	262.5	250.0	218	151.9	522	20.55	268	10.55	220	8.66	226	8.90	77.0	169.8	T11

LPS Performance Characteristics (6V, 12V Series)

CYCLE SERVICE LIFE**SELF-DISCHARGE AT DIFFERENT TEMPERATURES****EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE****CYCLIC APPLICATION CHARGE MODE**

- 1) with switch regulator (two-step controller) charge on curve max. charge voltage for max. 2 hrs/day then switch over to continuous charge
- 2) Standard charge without switching
- 3) Boost charge (Equalizing charge with external generator) charge on curve continuous charge for max. 5 hrs/month, then switch over to curve Standard charge

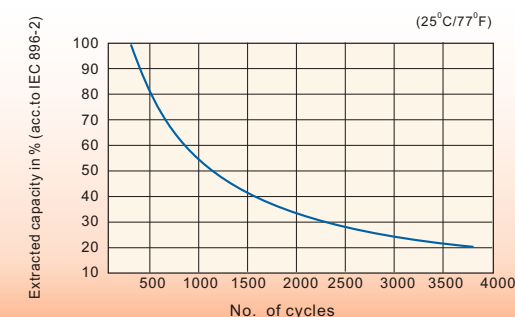
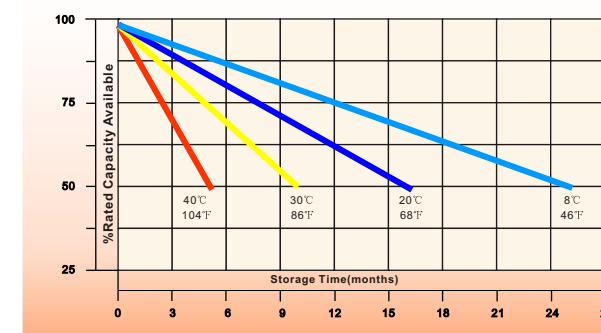
LPS II Models and Parameters (2V Series)

Typical Applications

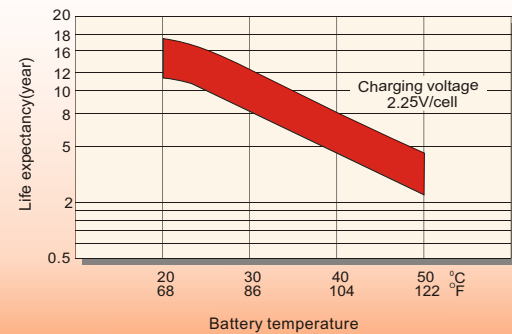
- ♦ Green energy systems
- ♦ Communication systems

Model	Nominal Voltage (V)	Rated Capacity (AH)					Approx Dimension								Approx Weight		Terminal type
		100HR	20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPS2-115	2	115	107	100	88	58.8	170	6.69	72	2.83	205	8.07	212	8.35	6.00	13.2	T6
LPS2-170	2	173	160.6	150	132	88.2	170	6.69	98	3.86	205	8.07	212	8.35	8.50	18.7	T7
LPS2-230	2	230	214	200	175.5	117.6	170	6.69	110	4.33	328	12.91	350	13.78	13.2	29.1	T11
LPS2-285	2	288	268	250	219.5	147	170	6.69	110	4.33	328	12.91	350	13.78	14.5	32.0	T11
LPS2-350	2	345	322	300	263.5	176.4	170	6.69	150	5.91	328	12.91	350	13.78	18.7	41.2	T11
LPS2-400	2	403	374	350	307.5	205.8	170	6.69	150	5.91	328	12.91	350	13.78	19.5	43.0	T11
LPS2-450	2	460	428	400	351.5	235.2	210	8.27	175	6.89	330	12.99	350	13.78	24.9	54.9	T11
LPS2-500	2	518	482	450	395.5	264.6	210	8.27	175	6.89	330	12.99	350	13.78	26.0	57.3	T11
LPS2-550	2	575	536	500	439.5	294	240	9.45	175	6.89	330	12.99	350	13.78	30.0	66.2	T11
LPS2-700	2	690	642	600	527	352.8	300	11.81	175	6.89	330	12.99	350	13.78	36.6	80.7	T11
LPS2-900	2	920	856	800	703	470.4	410	16.14	175	6.89	330	12.99	350	13.78	50.0	110.3	T11
LPS2-1000	2	1040	964	900	791	529.2	410	16.14	175	6.89	330	12.99	350	13.78	51.5	113.6	T11
LPS2-1100	2	1150	1070	1000	879	588	475	18.70	175	6.89	328	12.91	350	13.78	58.5	129.0	T11
LPS2-1350	2	1380	1284	1200	1055	706	475	18.70	175	6.89	328	12.91	350	13.78	65.8	145.1	T11
LPS2-1700	2	1730	1606	1500	1318	882	403	15.87	354	13.94	339	13.35	349	13.74	96.5	212.8	T11
LPS2-2300	2	2300	2140	2000	1758	1176	490	19.29	350	13.78	339	13.35	349	13.74	121.0	266.8	T11
LPS2-2800	2	2880	2676	2500	2197	1470	490	19.29	350	13.78	339	13.35	349	13.74	138.0	304.3	T11
LPS2-3500	2	3450	3210	3000	2636	1764	709	27.91	350	13.78	337	13.27	347	13.66	182.0	401.3	T11

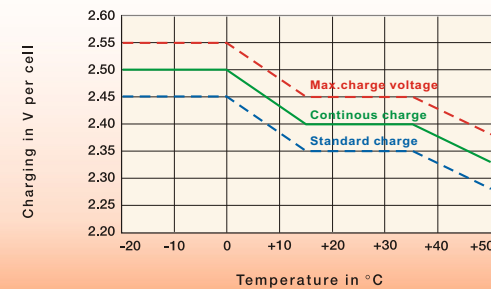
LPSII Performance Characteristics

CYCLE SERVICE LIFE**SELF-DISCHARGE AT DIFFERENT TEMPERATURES**

EFFECT OF TEMPERATURE ON LONG TERM
FLOAT DESIGNED LIFE



CYCLIC APPLICATION CHARGE MODE



- 1) with switch regulator (two-step controller) charge on curve max. charge voltage for max. 2 hrs/day then switch over to continuous charge
- 2) Standard charge without switching
- 3) Boost charge (Equalizing charge with external generator) charge on curve continuous charge for max. 5 hrs/month, then switch over to curve Standard charge

LPL SERIES - LONG LIFE STANDBY



General Features

- ◆ Special grid alloy and high purity raw material ensure less gassing, less self-discharging
- ◆ Grid refining technology and the thicker plates are used to extend the battery standby life and reduce the plate grid corrosion speed
- ◆ Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- ◆ Using oxygen recombination technology: maintenance-free
- ◆ ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)
- ◆ Unique vent valve design: control water losing, prevent air and spark going inside

LPL Models and Parameters (4V, 6V, 12V Series)

Typical Applications

- ◆ UPS and EPS
- ◆ Emergency light
- ◆ Railway signal and aircraft signal system
- ◆ Marine and power stations
- ◆ Alarm and security system
- ◆ Electronic apparatus and equipment
- ◆ Communication power supply, DC power supply

Focusing on the environmental friendly development, LEOCH commits on the harmony between human being and the ecosphere of the Earth, and delivering rechargeable electricity storage products for green energy systems. We know that the Earth we are living on is borrowed from the next generation...

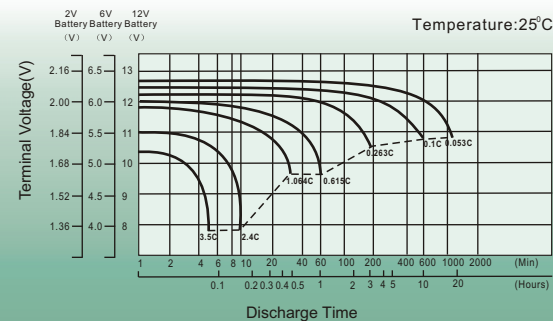
ENVIRONMENTAL
FRIENDLY

Model	Nominal Voltage (V)	Rated Capacity (AH)				Approx Dimension								Approx Weight		Terminal type
						Length		Width		Height		Total Height				
		20HR	10HR	5HR	1HR	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPL4-8.0	4	8.48	8.00	6.94	4.92	102	4.02	44	1.73	95	3.74	101	3.98	1.01	2.23	T2
LPL6-6.5	6	6.89	6.50	5.64	4.00	151	5.94	34	1.34	94	3.70	100	3.94	1.26	2.78	T1/T2
LPL6-9.0	6	9.54	9.00	7.81	5.54	151	5.94	51	2.01	94	3.70	100	3.94	1.7	3.75	T1/T2
LPL6-11	6	11.7	11.0	9.5	6.77	151	5.94	51	2.01	94	3.70	100	3.94	1.95	4.3	T1/T2
LPL6-18	6	19.1	18.0	15.6	11.1	157	6.18	83	3.27	125	4.92	125	4.92	3.21	7.08	T3
LPL12-4.5	12	4.78	4.50	3.90	2.77	151	5.94	53	2.09	93	3.66	99	3.90	1.9	4.19	T1/T2
LPL12-7.0	12	7.42	7.00	6.05	4.31	151	5.94	65	2.60	93.5	3.68	99	3.92	2.45	5.4	T1/T2
LPL12-12	12	12.7	12.0	10.4	7.38	151	5.94	98	3.86	95	3.74	101	3.98	3.8	8.38	T1/T2
LPL12-18	12	19.1	18.0	15.6	11.1	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	5.7	12.57	T3/T12
LPL12-24H	12	25.4	24.0	20.8	14.8	165	6.5	125	4.92	175	6.89	175	6.89	8.7	19.18	T10/T12
LPL12-24	12	25.4	24.0	20.8	14.8	166	6.54	175	6.89	125	4.92	125	4.92	7.8	17.2	T2/T3/T12
LPL12-26	12	27.6	26.0	22.6	16.0	166	6.54	175	6.89	125	4.92	125	4.92	8.10	17.86	T3/T12
LPL12-28H	12	29.6	28.0	24.3	17.2	165	6.5	125	4.92	175	6.89	175	6.89	9.5	20.95	T3/T10/T12
LPL12-28	12	29.6	28.0	24.3	17.2	166	6.54	175	6.89	125	4.92	125	4.92	8.60	18.96	T3
LPL6-100	6	107.0	100.0	87.0	62.0	195	7.68	170	6.69	206.5	8.13	212.5	8.37	16.5	36.38	T6
LPL6-150	6	160.5	150.0	130.5	93.0	260	10.24	180	7.09	247	9.72	253	9.96	23	50.72	T11

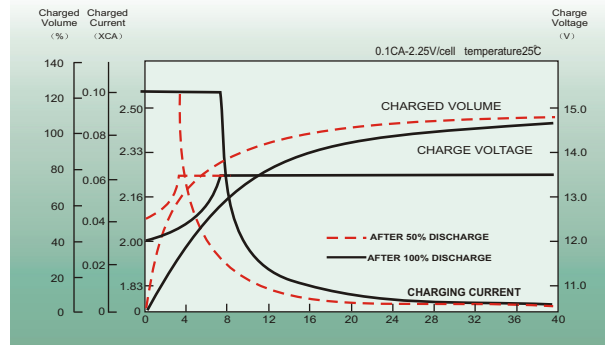
Model	Nominal Voltage (V)	Rated Capacity (AH)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
						1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	
LPL6-200	6	214	200.0	174	124.0	322	12.68	178	7.01	228	8.98	234	9.21	35.0	77.18	T11
LPL12-38	12	40.6	38.0	33.1	23.6	197	7.76	165	6.50	170	6.69	170	6.69	13.2	29.11	T6/T10/T12
LPL12-45	12	45	42.0	36.6	26.0	197	7.76	165	6.50	170	6.69	170	6.69	14.5	31.97	T6
LPL12-55	12	58.8	55.0	47.9	34.1	228	8.98	137	5.39	210	8.27	230	9.06	17.7	39.00	T9/T6
LPL12-60	12	64.2	60.0	52.2	37.2	260	10.24	168	6.61	210	8.27	216	8.5	21.0	46.3	T6/T9
LPL12-65	12	69.6	65.0	56.5	40.3	348	13.70	167	6.57	178	7.01	178	7.01	21.0	46.3	T6
LPL12-70	12	75.0	70.0	60.9	43.4	348	13.70	167	6.57	178	7.01	178	7.01	24.0	52.92	T6
LPL12-75	12	80.2	75.0	65.5	46.5	259	10.24	168	6.61	208	8.19	230	9.06	23.0	50.72	T6/T14
LPL12-90H	12	96.4	90.0	78.5	55.8	305	12.05	168	6.61	207	8.15	213	8.39	27.5	60.6	T6
LPL12-100	12	107	100.0	87	62.0	330	12.99	173	6.81	212	8.35	220	8.66	31.5	69.50	T11
LPL12-120	12	128.4	120.0	104.5	74.4	408	16.06	177	6.97	225	8.86	225	8.86	37.6	82.91	T11
LPL12-140	12	149.8	140.0	122.0	86.8	345	13.58	172	6.77	274	10.79	280	11.02	45.5	100.30	T11
LPL12-150	12	160.5	150.0	130.5	93.0	483	19.02	170	6.69	238.5	9.39	238.5	9.39	48.2	106.28	T11
LPL12-200	12	214	200.0	174	124.0	522	20.55	240	9.45	218	8.58	224	8.82	65.0	143.3	T11
LPL12-250	12	268.0	250.0	217.5	155.0	522	20.55	268	10.55	220	8.66	226	8.9	77.0	169.8	T11

LPL Performance Characteristics (4V, 6V, 12V Series)

DISCHARGE CHARACTERISTICS



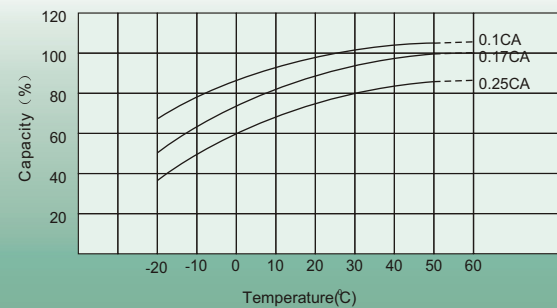
CHARGING CHARACTERISTICS



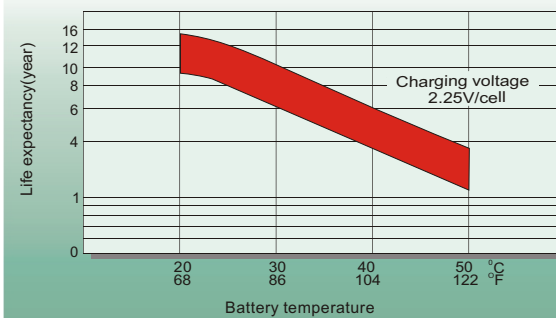
SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. Optional charging ways as below:
1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
3. Charged for 8-10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE

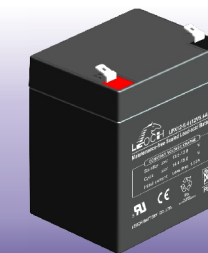


LPL II Models and Parameters (2V Series)

Typical Applications

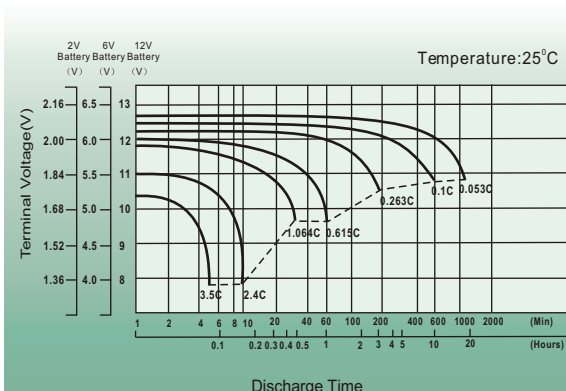
- ◆ Tele-communication central station (wired or cellular)
- ◆ Power system communication, military communication, etc.
- ◆ Network communication including: data transmission, television signal transmission, etc.
- ◆ Uninterruptable Power System (UPS- for Telecom)
- ◆ EPS

Model	Nominal Voltage (V)	Rated Capacity (AH)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPL2-100	2	106.8	100	88.5	60.1	170	6.69	72	2.83	205	8.07	212	8.35	6.0	13.23	T6
LPL2-150	2	160	150	133	90.1	170	6.69	98	3.86	205	8.07	212	8.35	8.5	18.74	T7
LPL2-200	2	214	200	177.5	120.1	170	6.69	110	4.33	328	12.91	350	13.78	13.6	30.0	T11
LPL2-250	2	266	250	222	150.2	170	6.69	110	4.33	328	12.91	350	13.78	14.5	32.0	T11
LPL2-300	2	320	300	266	180.2	170	6.69	150	5.91	328	12.91	350	13.78	18.7	41.2	T11
LPL2-350	2	374.5	350	310.5	210.2	170	6.69	150	5.91	328	12.91	350	13.78	20.5	45.2	T11
LPL2-400	2	426	400	355	240.3	210	8.27	175	6.89	330	12.99	350	13.78	25.5	56.2	T11
LPL2-450	2	480	450	399.5	270.5	210	8.27	175	6.89	330	12.99	350	13.78	26.3	58.0	T11
LPL2-500	2	534	500	443.5	300.3	240	9.45	175	6.89	330	12.99	350	13.78	30.5	67.3	T11
LPL2-600	2	640	600	532.5	360.4	300	11.81	175	6.89	330	12.99	350	13.78	38.2	84.2	T11
LPL2-800	2	854	800	710	480.5	410	16.14	175	6.89	330	12.99	350	13.78	51.5	113.6	T11
LPL2-1000	2	1068.0	1000	887.5	600.7	475	18.70	175	6.89	328	12.91	350	13.78	60	132.3	T11
LPL2-1200	2	1280.0	1200	1065.0	720.8	475	18.70	175	6.89	328	12.91	350	13.78	65.8	145.1	T11
LPL2-1500	2	1600.0	1500	1331.0	901.0	403	15.87	354	13.94	339	13.35	349	13.74	98	216.1	T11
LPL2-2000	2	2134.0	2000	1775.0	1201.3	490	19.29	350	13.78	339	13.35	349	13.74	125.0	275.6	T11
LPL2-2500	2	2668.0	2500	2218.5	1501.6	490	19.29	350	13.78	339	13.35	349	13.74	138.0	304.3	T11
LPL2-3000	2	3202.0	3000	2662.0	1802.0	709	27.91	350	13.78	337	13.27	347	13.66	188.0	414.5	T11

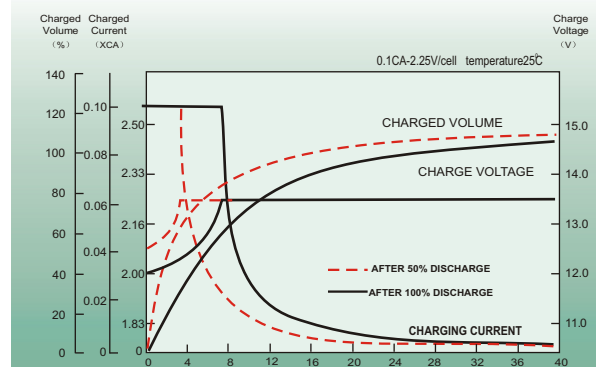


LPL II Performance Characteristics

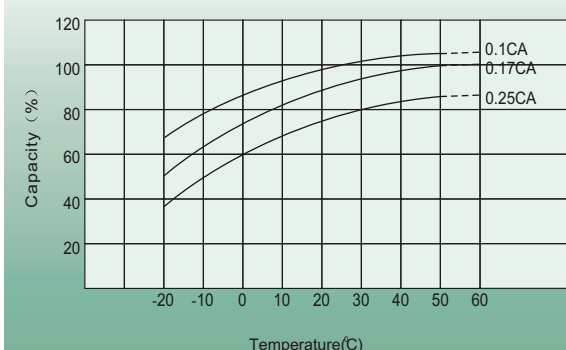
DISCHARGE CHARACTERISTICS



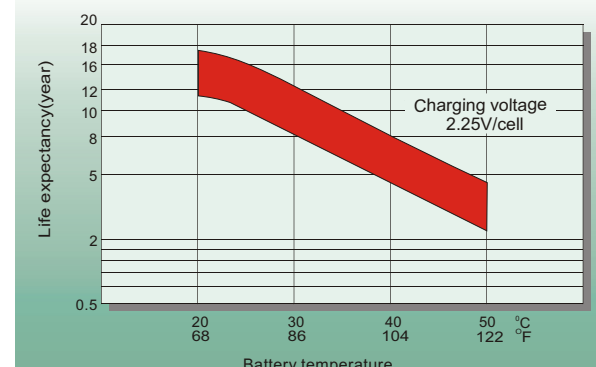
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. Optional charging ways below:
 1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
 2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
 3. Charged for 8~10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this is reached.

LPX SERIES - HIGH RATE / UPS

General Features

- Silver-coated copper terminals (T1, T2 terminal), brass insert terminals and lead terminals improve the electric conductivity
- Thin plate technology, special grid design, unique paste formula and plate curing process optimize high rate performance
- High quality AGM separators with less electrical resistance improve high current discharging properties
- ABS material: increase the strength of battery container (Flame-retardant ABS is optional)

LPX Models and Parameters

Typical Applications

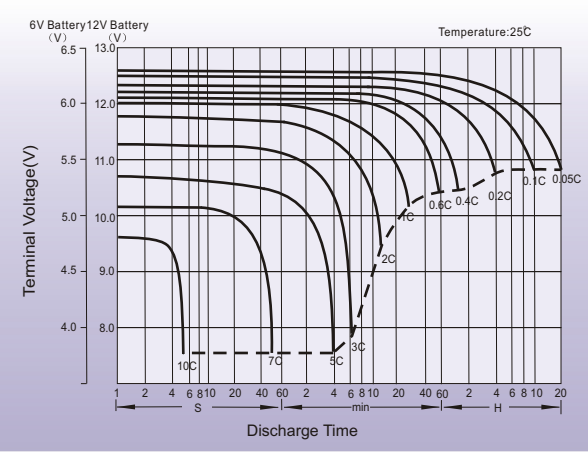
- UPS (High rate)
- High power backup supply
- Emergency power supply
- Starting system
- Power tools
- Emergency lighting
- Electric starting

Model	Nominal Voltage (V)	Watts in 15min (W/cell)	Rated Capacity (AH)				Approx Dimension								Approx Weight		Terminal type
			8HR	5HR	1HR	Length		Width		Height		Total Height					
						1.67V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	
LPX12-2.2	12	7.65	2.2	1.93	1.72	178.0	7.01	35.0	1.38	60	2.36	66.0	2.60	0.96	2.12	T1	
LPX12-3.2	12	11.8	3.2	2.91	2.47	134.0	5.28	67.0	2.64	60.5	2.38	66.5	2.62	1.35	2.98	T1	
LPX12-5.4	12	20.4	5.4	4.85	4.39	90.0	3.54	70.0	2.76	101	3.98	107.0	4.21	1.77	3.9	T1/T2	
LPX12-6.0	12	22.3	6.0	5.40	4.54	151.0	5.94	65.0	2.56	93.5	3.68	99.0	3.90	2.18	4.81	T1/T2	
LPX12-6.5	12	25.3	6.5	5.65	4.52	151.0	5.94	51.0	2.01	93	3.66	98.0	3.86	1.90	4.19	T1/T2	
LPX12-7.0	12	28.4	7.0	6.40	5.91	151.0	5.94	65.0	2.56	93.5	3.68	99.0	3.90	2.50	5.51	T1/T2	
LPX12-7.6	12	32.2	7.6	7.0	6.28	151.0	5.94	65.0	2.56	93.5	3.68	99.0	3.90	2.68	5.91	T1/T2	
LPX12-12	12	49.8	12.0	10.5	8.77	151.0	5.94	98.0	3.86	95	3.74	101.0	3.98	4.05	8.93	T1/T2	
LPX12-17	12	66.6	17.0	15.7	12.3	181.5	7.15	77.0	3.03	167.5	6.59	167.5	6.59	5.78	12.74	T12	
LPX12-18	12	70.5	18.0	16.2	13.0	181.5	7.15	77.0	3.03	167.5	6.59	167.5	6.59	6.0	13.23	T3/T12	
LPX12-20	12	81.4	20.0	18.5	13.9	181.5	7.15	77.0	3.03	166.5	6.56	166.5	6.56	6.9	15.21	T3/T12	
LPX12-24	12	99.8	24.0	21.8	16.9	166	6.54	175.0	6.89	125	4.92	125.0	4.92	8.6	18.96	T3/T12	
LPX12-35	12	120.1	33.3	30.3	22.9	195.0	7.68	130.0	5.12	164	6.46	180.0	7.09	10.5	23.15	T10	
LPX12-38	12	126.3	36.6	32.8	25.3	197.0	7.76	165.0	6.50	170	6.69	170.0	6.69	13.2	29.11	T6/T10/T12	
LPX12-65	12	221.2	65.0	55.5	41.8	348.0	13.7	167.0	6.57	178	7.01	178.0	7.01	21.0	46.3	T6/T11	
LPX12-72	12	237.7	72.0	65.5	46.2	259.0	10.2	168.0	6.61	208	8.19	214	8.43	22.3	49.17	T6/T9/T14	
LPX12-100	12	356.1	100.0	89.5	68.2	330.0	12.99	173.0	6.81	212	8.35	220	8.66	30.4	67.03	T11	
LPX12-120	12	483.8	120.0	105.0	85.3	408.0	16.06	177.0	6.97	225	8.86	225	8.86	37.6	82.91	T11	
LPX12-150	12	487.5	150.0	131.0	100.4	483.0	19.02	170.0	6.69	238.5	9.39	238.5	9.39	43.5	95.92	T11	
LPX12-200	12	675.8	200.0	174.5	136.0	522.0	20.55	240.0	9.45	218	8.58	224.0	8.82	61.5	135.6	T11	
LPX12-250	12	783.3	250.0	218.0	165.5	522.0	20.55	268.0	10.55	220	8.66	226.0	8.90	73.0	160.97	T11	
LPX6-100	6	356.1	100.0	89.0	68.2	195.0	7.68	170.0	6.69	206.5	8.13	212.5	8.37	15.6	34.4	T6	
LPX6-150	6	487.5	150.0	131.0	100.4	260.0	10.24	180.0	7.09	247	9.72	253.0	9.96	21.2	46.75	T7	
LPX6-200	6	675.8	200.0	174.5	136.0	322.0	12.68	178.0	7.01	228	8.98	234.0	9.21	30.5	67.25	T11	

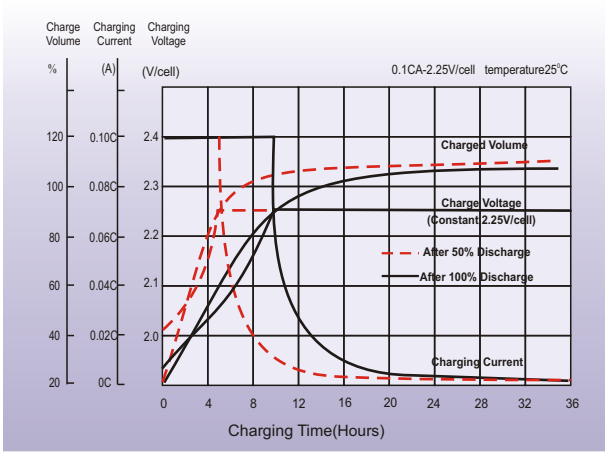


LPX Performance Characteristics

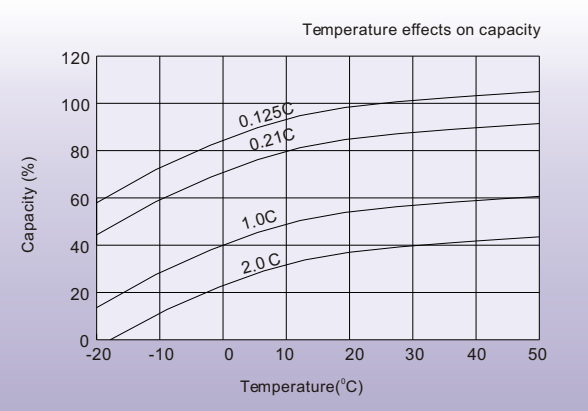
DISCHARGE CHARACTERISTICS



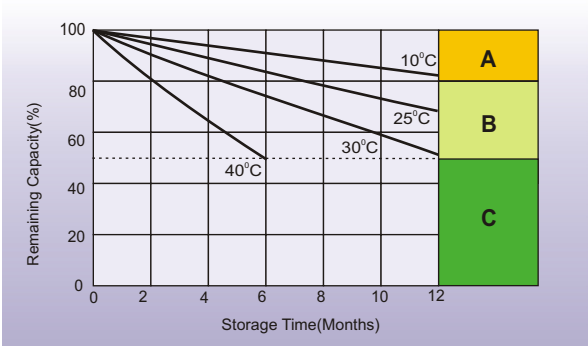
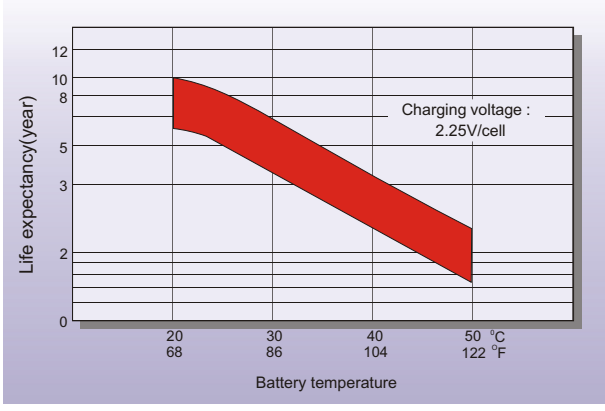
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

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2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
3. Charged for 8~10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

LPF SERIES - FRONT TERMINAL

General Features

- ◆ Specifically ideal for 19 inch or 23 inch power cabinets
- ◆ Front terminals make the installation, maintenance and supervision easy
- ◆ Shield designs protect terminals from short circuit and show good appearance
- ◆ Unique vent valve design: reduce water losing and prevent air/spark going inside
- ◆ Thick plates, special formula of paste and plate making process for a long service life
- ◆ ABS material: increase the strength of battery container (Flame-retardant ABS is optional)

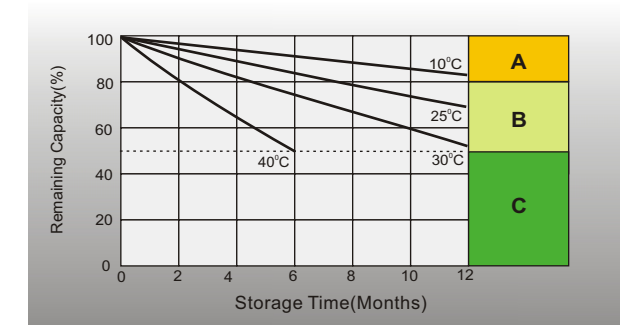
LPF Models and Parameters

Typical Applications

- ◆ For standard 19 inch or 23 inch power cabinets
- ◆ Network connection equipment of communication system
- ◆ Power system of special network or local area network
- ◆ UPS, standby power supply
- ◆ Power station systems
- ◆ Railway and marine systems

Model	Nominal Voltage (V)	Rated Capacity(AH)				Approx Dimension								Approx Weight		Terminal type
		10HR	8HR	5HR	1HR	Length		Width		Height		Total Height				
		1.80V/cell	1.80V/cell	1.75V/cell	1.67V/cell	mm	in.	mm	in.	mm	in.	mm	in.	kg	lbs	
LPF12-40	12	41.5	40.0	37.8	27.7	277	10.9	106	4.17	222	8.74	222	8.74	15.5	34.2	T6
LPF12-55	12	57.1	55.0	51.9	38.1	277	10.9	106	4.17	222	8.74	222	8.74	18.0	39.7	T6
LPF12-70	12	72.7	70.0	66.1	48.5	564	22.2	114	4.49	187	7.36	187	7.36	25.5	56.2	T6
LPF12-75	12	77.9	75.0	70.8	51.9	564	22.2	114	4.49	187	7.36	187	7.36	26.0	57.3	T6
LPF12-90	12	93.4	90.0	85.0	62.3	508	20.0	110	4.33	238.5	9.39	238.5	9.39	32.0	70.6	T13
LPF12-90H	12	93.4	90.0	85.0	62.3	394	15.5	110	4.33	285	11.2	285	11.2	32.6	71.9	T6
LPF12-100A	12	103.8	100.0	94.5	69.2	508	20.0	110	4.33	238.5	9.39	238.5	9.39	35.0	77.2	T13
LPF12-100B	12	103.8	100.0	94.5	69.2	560	22.0	110	4.33	233	9.17	233	9.17	35.6	78.5	T13
LPF12-100H	12	103.8	100.0	94.5	69.2	394	15.5	110	4.33	285	11.2	285	11.2	34.5	76.1	T6
LPF12-125	12	129.8	125.0	118.1	86.5	551	21.7	110	4.33	287	11.3	287	11.3	41.5	91.5	T6
LPF12-150A	12	150.0	144.5	136.5	100.0	551	21.7	110	4.33	287	11.3	287	11.3	46.4	102.3	T6
LPF12-150B	12	155.7	150.0	141.7	103.8	560	22.0	110	4.33	280	11.0	280	11.0	43.8	96.6	T13
LPF12-180	12	170.0	163.4	154.6	113.3	560	22.0	126	4.96	280	11.0	280	11.0	51.2	112.9	T13

LPF Performance Characteristics

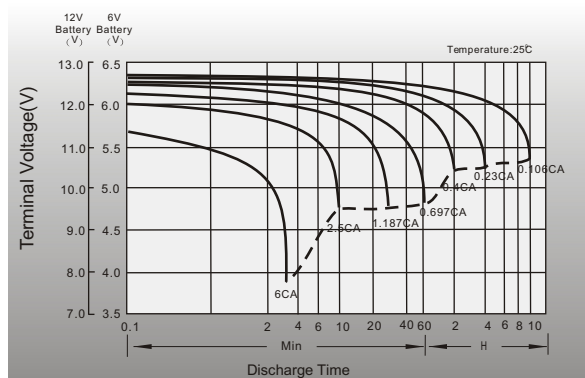


SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

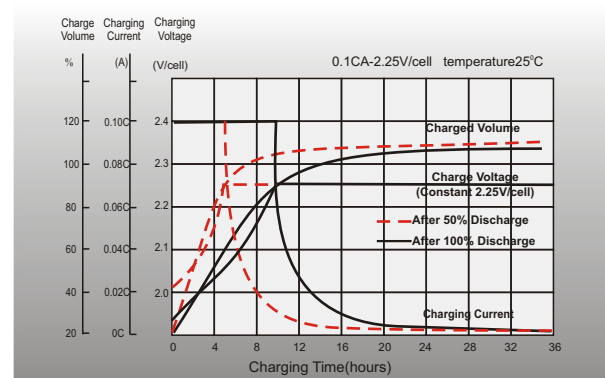
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2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
3. Charged for 8~10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

BATTERY CARE AND MAINTENANCE

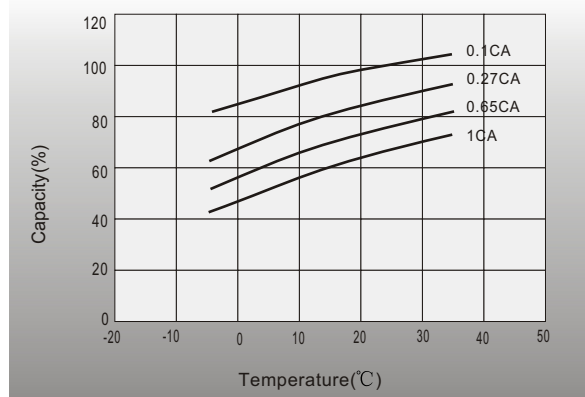
DISCHARGE CHARACTERISTICS



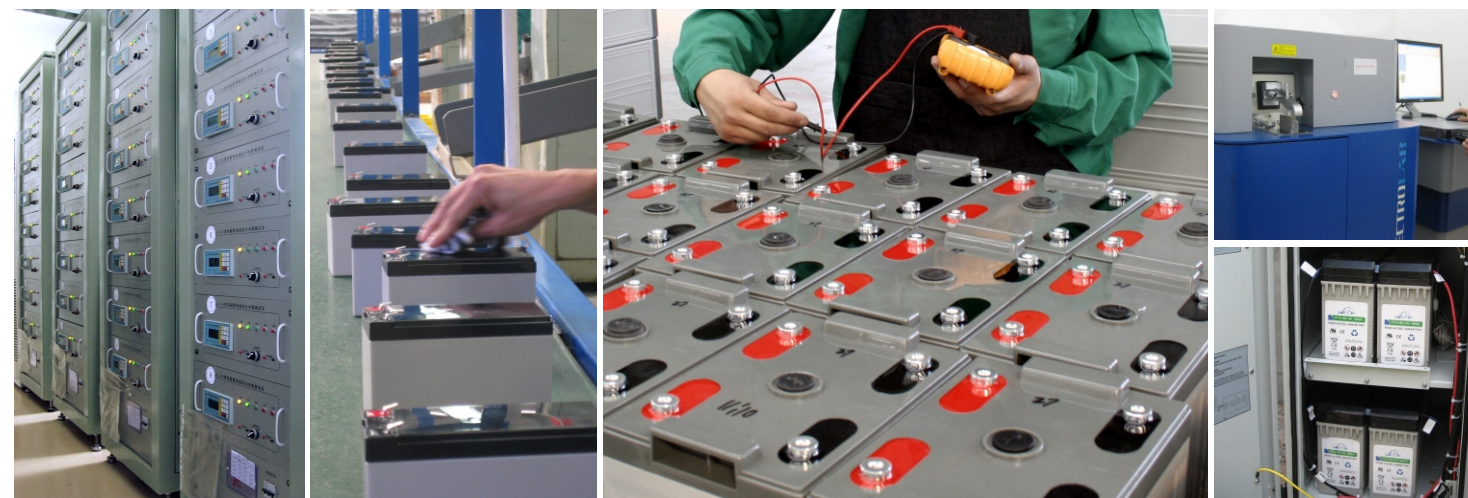
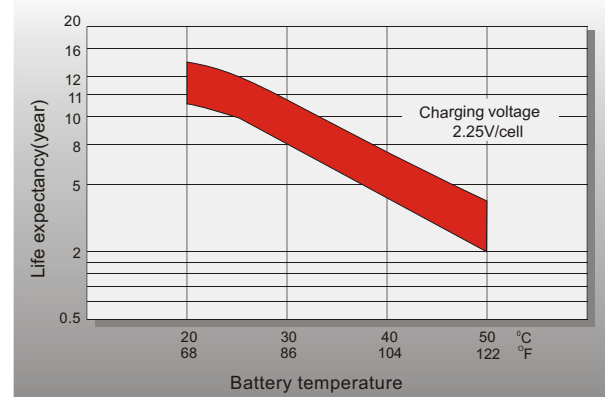
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



Top-charge and precautions

Any VRLA-AGM battery will be damaged by continual undercharging or overcharging (Capacity is reduced and life is shortened), although **LEOCH** batteries accept a charge very well due to their low internal resistance. Overcharging is extremely harmful to any VRLA battery because of the sealed design. Overcharging dries out the electrolyte by driving the oxygen and hydrogen out of the battery through the pressure relief valves which will lead to less capacity and shorter lifetime. If a battery is continually undercharged, a barrier layer of sulfate will build up on the positive plate which will impact recharging acceptability. Premature plate shedding can also happen. Performance is reduced and life is shortened.

It is critical that a charger be used that limits voltage. The charger must be temperature-compensated to prevent under or overcharging due to ambient temperature changes (Please refer to the table titled as “**Charge Voltage and Temperature Ranges**” on Page 3). The warranty is void if improperly charged. Use a good constant potential, temperature-compensated, voltage-regulated charger. Constant current chargers should never be used on VRLA batteries.

Battery storage

If the battery has high temperature or poor ventilation during storage and delivery, the self-discharge will increase. So, keep good ventilation and keep away from fire, flame, heat supply etc. When storing the battery, take it off from the charger and load and keep it in the dry and cool place. Please supplement charge before use when the battery has been kept for a long time.

Cautions:

- 1) Keep batteries in a place, where children can not reach.
- 2) Do not attempt to disassemble, revise, damage, impact, dispose batteries, otherwise the battery can leak, be overheated, or explode.
- 3) Do not dispose of the batteries in water, fire, and do not heating the batteries.
- 4) Do not short batteries.
- 5) Do not put your face near the top of batteries. Please wear gloves, eye protection when you measure or repair batteries.
- 6) There is sulfuric acid in the battery. Do not make contact with sulfuric acid in skin, clothes, or especially in eyes. If eyes make contact with sulfuric acid, please wash with a lot of clean water, and consult a physician immediately.
- 7) The suitable temperature is -15°C ~ +50°C, but it will have longer life in the temperature from +20°C ~ +30°C. The operation circumstances are defined as: discharging temperature range -15°C ~ +50°C; charging temperature range 0°C ~ +40°C.

LEOCH CUSTOMER CARE STATEMENT

We, at Leoch International Technology Limited Take great pride in serving our customers in a courteous and professional manner, while supplying a quality product at competitive prices, delivered in an efficient, timely manner. At **LEOCH**, we strongly feel that our customer care is one of our greatest strengths.

Each of our customer service representatives undergoes an intensive training program, and learns the latest in customer support techniques, and supported as well with state of the art customer management systems software.

We are in the business of fulfilling our customer's "wants and needs", whether that would be providing general information, or detailed order updates, and post order follow up. We will go the "extra mile" to earn your business, transaction after transaction.

For more information, please visit our website WWW.LEOCH.COM or email us at export@leoch.com

LEOCH factory	LEOCH sales office	Customers
★	●	●

