



TS16949 ISO14001 ISO9001 OHSAS18001



◆ **China sales office:**

Add:5th Floor,Xinbaohui Bldg.,Nanhai Blvd.,Nanshan,Shenzhen, China.
Tel:+86-755-86036060(100 lines) E-mail: export@leoch.com

© 2018 LEOCH. Allrights reserved.
Trademarks and logosare the property ofLEOCH and its affiliatesunless otherwise noted.
Subject to revisions withoutprior notice.

Publication No: LB-VRLA-AGM-PB-EN-V1.3-201903

LEOCH *POWER* THE GALAXY

VRLA-AGM BATTERIES

WWW.LEOCH.COM

- **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



Guangdong Factory



Anhui Factory



Malaysia Factory



Sri Lanka Factory



CONTENTS

COMPANY INTRODUCTION	P1
BATTERY FEATURES	P2
TERMINAL OPTIONS	P4
LP SERIES-GENERAL PURPOSE	P6
LPC SERIES -DEEP CYCLE	P13
LPS SERIES -SOLAR POWER	P15
LPL SERIES -LONG LIFE STANDBY	P19
LPX SERIES -HIGH RATE / UPS	P23
LPF SERIES -FRONT TERMINAL	P25
BATTERY CARE AND MAINTENANCE	P27
LEOCH SALES NETWORK	P28

WWW.LEOCH.COM

COMPANY INTRODUCTION

Leoch International Technology Limited ("Leoch"), an international new high- tech enterprise listed on the Main Board of the Hong Kong Stock Exchange(stock code: 842), was founded in 1999. We specialize in research and development, manufacturing, sales and marketing of full categories of battery. After years of growth, Leoch became one of the leading and is the top exporter of battery manufacturer in the People's Republic of China (the "PRC").

Leoch has established eight regional production bases located in Guangdong, Jiangsu and Anhui of the PRC, Malaysia, Sri Lanka and India respectively. With more than 10,000 employees in which more than 500 are technical officer, Leoch factories cover an area of more than 1 million square meters. The 97 production lines and related testing equipments together with three dedicated battery research and development centers located in Guangdong, Anhui and Jiangsu constituted a strong and advance manufacturing and research and development capabilities of the enterprise. Leoch mainly produces reserve power batteries, SLI batteries and motive power batteries and they include series products such as AGM VRLA batteries, VRLA-GEL battery, pure lead batteries, UPS high rate batteries, marine batteries, railway batteries, start-stop batteries, automotive batteries, motorcycle batteries, OPzV, OPzS, PzS, PzV and PzB tubular plate batteries, golf cart batteries, scrubber sweeper batteries and electric vehicle batteries etc.. These products are widely used in various related areas such as telecommunication, power system, radio and television system, railway, solar energy, UPS, emergency lights, security, alarm, gardening tool, car, motorcycle, golf cart, forklift truck, electric vehicle and baby carrier etc.. Leoch annual production capacity exceeds 20 million KVAh.

Our forward-looking research and development team and high production quality make Leoch possessed of influential international competitive power. With more than 40 trading companies established in the PRC and around the world which located in regions like the United States of America, Europe and South-East Asia, our products sell and distribute to more than 100 countries.

Being hardworking and enterprising, through practice, Leoch keeps on developing and blazing new trails constantly. For quality control, professional quality management centres have been set up and successfully acquired the recognition of various standards such as ISO9001, TS16949, ISO14001 and OHSAS18001. In the area of technological innovation, we have carried out technical cooperation with renowned overseas battery manufacturers, introduced advance equipment and instruments from domestic and overseas suppliers and obtained a number of patent technologies. Our production capability has reached international advanced level. To enhance Leoch independent innovation ability, we continuously perform technical exchanges and cooperation with famous universities in the PRC and has established research bases with them. For Leoch to become a globalized competitive leading battery manufacturer soon, we have laid a solid foundation.

LEOCH VRLA-AGM BATTERY FEATURES

INTRODUCTION

LEOCH VRLA-AGM batteries are Valve-Regulated Lead-Acid batteries with Absorbed Glass Mat (AGM) separators. Since 1994, LEOCH has made rapid progress by using matured technology invented more than half a century ago. 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 tools and molds upon our customer's request. 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 listed 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 Equipment
- **LPS series, Solar / Wind / Hydro Power System Applications:**
 - Green Energy Systems (solar, wind, hydro, etc) • Measurement Stations • Pump Systems • Signal Stations
 - Emergency Lighting • Railway Crossings • Traffic Lights • Street Lights • Lawn Lamps
 - 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 however 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

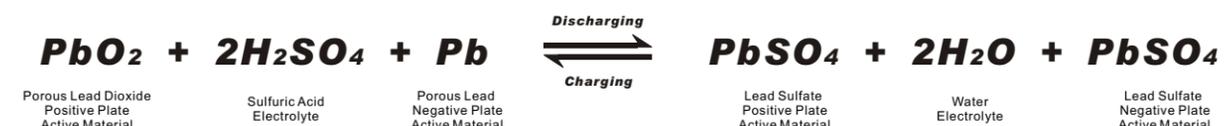
Charge Voltages and Temperature Ranges

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
100-11	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

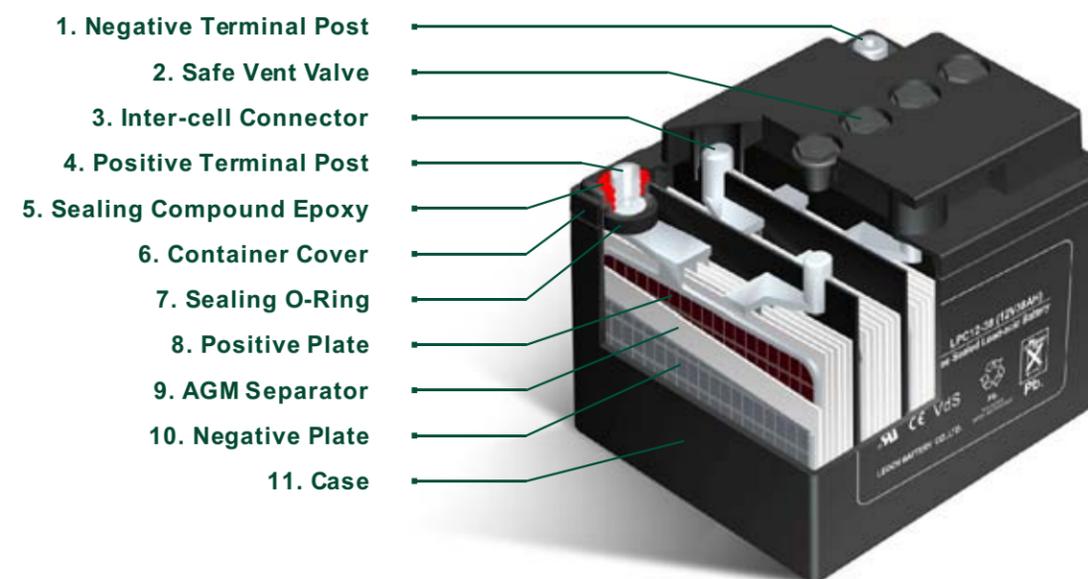
State of charge vs. Open circuit voltage



BATTERY OPERATION THEORY



VRLA BATTERY CONSTRUCTION



LEOCH VRLA-AGM BATTERY TERMINAL OPTIONS

A SPLENDID FUTURE THROUGH THE EFFORTS OF ALL

Note: the figures below just show the appearance and dimension.
For the positioning on each battery model, please check the specification on www.leoch.com. Unit:mm[inch]

<p>T1 Terminal FASTON TYPE (Copper) quick disconnect tabs; silver coating for better conductivity</p>	<p>T2 Terminal FASTON TYPE (Copper) quick disconnect tabs; silver coating for better conductivity</p>	<p>T10 Terminal Lead Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>	<p>T11 Terminal Brass Coated With Tin; Threaded Insert 8mm STUD Torque: 11~14.7 N*m(97.28 ~ 130.0 in*lbs)</p>
<p>T3 Terminal Brass Coated With Tin Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>	<p>T4 Terminal Brass Coated With Tin</p>	<p>T12 Terminal Brass Coated With Tin; Threaded Insert 5mm STUD Torque: 2.0 ~ 3.0 N*m(17.69 ~ 26.53 in*lbs)</p>	<p>T13 Terminal Brass Coated With Tin; Threaded Insert 6mm STUD Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>
<p>T5 Terminal Lead Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>	<p>T6 Terminal Brass Coated With Tin; Threaded Insert 6mm STUD Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>	<p>T14-1 Positive Lead Torque: 11 ~ 14.7 N*m(97.28 ~ 130.0 in*lbs)</p>	<p>T14-2 Negative Lead Torque: 11 ~ 14.7 N*m(97.28 ~ 130.0 in*lbs)</p>
<p>T7 Terminal Brass Coated With Tin; Threaded Insert 6mm STUD Torque: 3.9 ~ 5.4 N*m(34.39 ~ 47.75 in*lbs)</p>	<p>T9 Terminal Lead Torque: 11 ~ 14.7 N*m(97.28 ~ 130.0 in*lbs)</p>	<p>Spring Terminal Spring Steel Fully Collapsible</p>	<p>Connector Toy Battery Connector H-Connector</p>

VALVE REGULATED LEAD-ACID BATTERY, RECHARGABLE

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: increases the strength of the battery container. (Flame-retardant ABS is optional)
- ◆ High purity raw material: ensures 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 ◆ Uninterruptible 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
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height		kg	lbs	
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LP4-3.5	4	3.5	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	4.5	4.19	3.78	2.73	52.5	2.07	48	1.89	94	3.70	100	3.94	0.60	1.32	T1
LP4-5.0	4	5.0	4.65	4.20	3.04	91	3.58	50	1.97	74	2.91	74	2.91	0.66	1.46	T1
LP4-8.0	4	8.0	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	93	3.66	100	3.94	1.14	2.51	T2
LP6-1.0	6	1.0	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	1.2	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	2.0	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	2.8	2.60	2.35	1.70	66	2.60	33	1.30	97	3.82	103	4.06	0.57	1.26	T1
LP6-3.2	6	3.2	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	4.0	3.72	3.36	2.43	70	2.76	47	1.85	100	3.94	106	4.17	0.74	1.63	T1
LP6-4.0H	6	4.0	3.72	3.36	2.43	70	2.76	47	1.85	100	3.94	106	4.17	0.76	1.61	T1
LP6-4.5	6	4.5	4.19	3.78	2.73	70	2.76	47	1.85	100	3.94	104.5	4.11	0.81	1.79	T1
LP6-4.5H	6	4.5	4.19	3.78	2.73	70	2.76	47	1.85	100	3.94	106	4.17	0.78	1.65	T1
LP6-4.5S	6	4.5	4.19	3.78	2.73	67	2.64	67	2.64	96	3.78	109	4.29	0.78	1.72	S
LP6-5.0	6	5.0	4.65	4.20	3.04	169.5	6.67	34.5	1.36	70	2.76	74	2.91	0.95	2.09	T1
LP6-5.4	6	5.4	5.02	4.53	3.28	70	2.76	47	1.85	100	3.94	106	4.17	0.84	1.76	T1
LP6-6.0	6	6.0	5.58	5.05	3.64	70	2.76	47	1.85	100	3.94	106	4.17	0.90	1.98	T1
LP6-7.0	6	7.0	6.51	5.95	4.40	150	5.91	34	1.3	94	3.70	100	3.94	1.12	2.47	T2
LP6-7.2	6	7.2	6.70	6.12	4.52	150	5.91	34	1.3	94	3.70	100	3.94	1.20	2.65	T2
LP6-7.5	6	7.5	6.98	6.40	4.71	150	5.91	34	1.3	94	3.70	100	3.94	1.26	2.78	T2

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

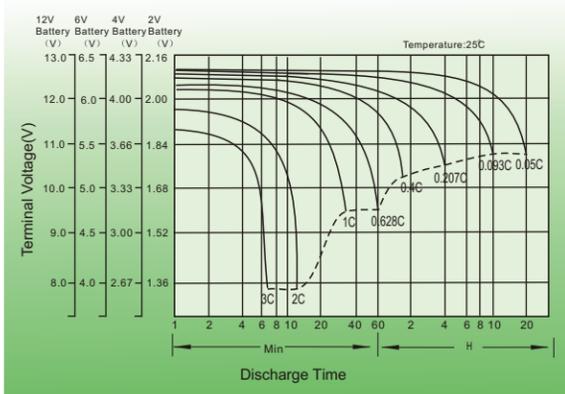
LP Models and Parameters Continued (Small size)

Model	Nominal Voltage (V)	Rated Capacity (Ah)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height		kg	lbs	
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LP6-7.8	6	7.8	7.25	6.63	4.90	150	5.91	34	1.3	94	3.70	100	3.94	1.28	2.82	T2
LP6-8.5	6	8.5	7.91	7.25	5.34	150	5.91	34	1.3	94	3.70	100	3.94	1.20	2.65	T2
LP6-8.5H	6	8.5	7.91	7.25	5.34	98	3.86	56	2.2	118	4.65	119.5	4.70	1.52	3.35	T2
LP6-10	6	10.0	9.30	8.50	6.28	151	5.94	50.5	1.99	94	3.70	100	3.94	1.62	3.57	T2
LP6-12	6	12.0	11.20	10.20	7.54	151	5.94	50.5	1.99	94	3.70	100	3.94	1.80	3.97	T2
LP6-13	6	13.0	12.09	11.05	8.16	108	4.25	70	2.8	140	5.51	140	5.51	2.24	4.94	NTI/PT2
LP6-14	6	14.0	13.00	11.90	8.79	151	5.94	50.5	1.99	94	3.70	100	3.94	2.05	4.52	T2
LP6-20	6	20.0	18.60	17.00	12.60	157	6.18	83	3.3	125	4.92	125	4.92	3.21	7.08	T3-A
LP6-36	6	36.0	33.50	30.60	22.60	161	6.34	87	3.4	163	6.42	169	6.65	5.50	12.1	T2
LP6-42	6	42.0	39.10	35.70	26.40	161	6.3	87	3.4	163	6.42	169	6.65	5.80	12.8	T2
LP8-3.2	8	3.2	2.98	2.69	1.940	134	5.3	36.5	1.4	63	2.48	69	2.72	0.75	1.65	T1
LP12-0.8	12	0.8	0.74	0.67	0.486	96	3.8	25	1.0	62	2.44	62	2.44	0.36	0.79	/
LP12-1.2	12	1.2	1.12	1.01	0.728	97	3.8	43	1.7	52	2.05	58	2.28	0.57	1.26	T1
LP12-1.9	12	1.9	1.77	1.60	1.15	178	7.0	35	1.4	60	2.36	66	2.60	0.88	1.94	T1
LP12-2.2	12	2.2	2.05	1.85	1.34	70.5	2.78	47.5	1.87	97	3.82	104	4.09	0.80	1.76	T1
LP12-2.3	12	2.3	2.14	1.93	1.40	178	7.0	35	1.4	60	2.36	66	2.60	0.97	2.14	T1
LP12-2.8	12	2.8	2.60	2.35	1.70	133	5.22	33	1.3	98	3.86	104	4.09	1.18	2.60	T1
LP12-2.9	12	2.9	2.70	2.44	1.76	79	3.1	56	2.2	99	3.90	105	4.13	1.10	2.43	T1
LP12-3.2	12	3.2	2.98	2.69	1.94	134	5.3	67	2.6	60	2.34	66	2.58	1.35	2.98	T1
LP12-4.0L	12	4.0	3.72	3.36	2.43	195	7.7	47	1.9	70	2.76	76	2.99	1.60	3.53	T1
LP12-4.0	12	4.0	3.72	3.36	2.43	90	3.5	70	2.8	101	3.98	107	4.21	1.45	3.20	T1
LP12-4.5	12	4.5	4.19	3.78	2.73	90	3.5	70	2.8	101	3.98	107	4.21	1.50	3.31	T1
LP12-5.0	12	5.0	4.65	4.20	3.04	151	5.9	53	2.1	93	3.66	99	3.90	1.75	3.86	T1
LP12-5.4	12	5.4	5.02	4.54	3.28	90	3.5	70	2.8	101	3.98	107	4.21	1.65	3.64	T1
LP12-6.0	12	5.8	5.58	5.05	3.64	90	3.5	70	2.8	101	3.98	107	4.21	1.88	4.15	T1
LP12-6.0H	12	6.0	5.58	5.05	3.64	139	5.47	48	1.9	101	3.98	102	4.02	1.68	3.70	NTI/PT2
LP12-6.5	12	6.5	6.05	5.55	4.08	151	5.9	65	2.6	93.5	3.68	99.5	3.92	2.14	4.72	T1
LP12-7.0E	12	6.2	5.71	4.88	3.90	151	6.0	65	2.6	93.5	3.70	100	3.92	1.85	4.08	T2
LP12-7.0	12	7.0	6.53	5.80	4.26	151	5.9	65	2.6	93.5	3.68	99.5	3.92	2.26	4.98	T2
LP12-7.2	12	7.2	6.72	6.05	4.44	151	5.9	65	2.6	93.5	3.68	99.5	3.92	2.42	5.34	T2
LP12-7.5	12	7.5	7.00	6.25	4.56	151	5.9	65	2.6	93.5	3.68	99.5	3.92	2.42	5.34	T2
LP12-7.8	12	7.8	7.28	6.50	4.74	151	5.9	65	2.6	93.5	3.68	100	3.92	2.50	5.51	T2
LP12-8.5	12	8.5	7.93	7.15	5.31	151	5.9	65	2.6	93.5	3.68	100	3.92	2.47	5.45	T2
LP12-9.0	12	9.0	8.31	7.55	6.24	151	5.9	65	2.6	93.5	3.68	99.5	3.92	2.66	5.87	T2
LP12-10	12	10.0	9.30	8.50	6.28	151	5.9	98	3.9	95	3.74	101	3.98	3.25	7.17	T2
LP12-10H	12	10.0	9.30	8.50	6.28	151	5.9	65	2.6	111	4.37	117	4.61	3.11	6.86	T2
LP12-12	12	12.0	11.2	10.2	7.54	151	5.9	98	3.9	95	3.74	101	3.98	3.50	7.72	T2
LP12-14	12	14.0	13.0	11.9	8.79	151	5.9	98	3.9	95	3.74	101	3.98	4.05	8.93	T2
LP12-15	12	15.0	14.0	12.8	9.42	181.5	7.1	76.5	3.01	167.5	6.59	167.5	6.59	4.70	10.4	T3
LP12-18	12	18.0	16.7	15.3	11.3	181.5	7.1	76.5	3.01	167.5	6.59	167.5	6.59	5.40	11.9	T3
LP12-20	12	20.0	18.6	17.0	12.6	181.5	7.1	76.5	3.01	167.5	6.59	167.5	6.59	5.78	12.7	T12
LP12-24	12	24.0	22.3	20.4	15.1	167.0	6.57	175	6.9	125	4.92	125	4.92	7.20	15.9	T3
LP12-24H	12	24.0	22.3	20.4	15.1	164.0	6.5	125	4.9	174	6.85	175	6.89	8.45	18.6	T12
LP12-26	12	26.0	24.2	22.1	16.3	166.0	6.5	175	6.9	125	4.92	125	4.92	7.80	17.2	T12
LP12-28	12	28.0	26.0	23.8	17.6	166.0	6.5	175	6.9	125	4.92	125	4.92	8.40	18.5	T3
LP12-28H	12	28.0	26.0	23.8	17.6	164.0	6.5	125	4.9	176	6.93	175	6.89	9.10	20.1	T3-A
LP12-30	12	29.0	27.0	24.7	18.2	166.0	6.5	175	6.9	125	4.92	125	4.92	8.60	19.0	T3
LP12-30H	12	30.0	27.9	25.5	18.8	195.0	7.7	130	5.1	164	6.46	178	7.01	9.70	21.4	T5
LP12-33	12	33.0	30.7	28.1	20.7	195.0	7.7	130	5.1	164	6.46	178	7.01	10.5	23.2	T5
LP12-35	12	35.0	32.6	29.8	22.0	195.0	7.7	130	5.1	164	6.46	178	7.01	11.2	24.7	T5

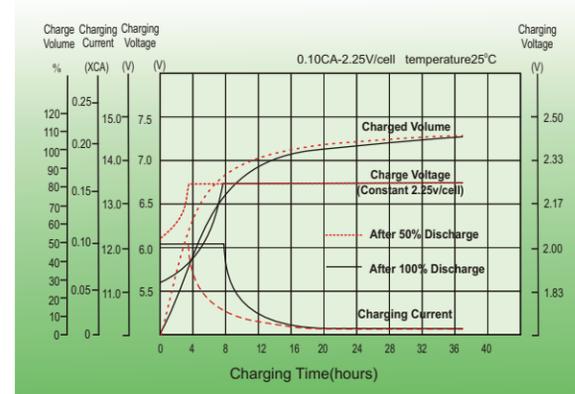
Specifications subject to change without notice.

LP Performance Characteristics (Small size)

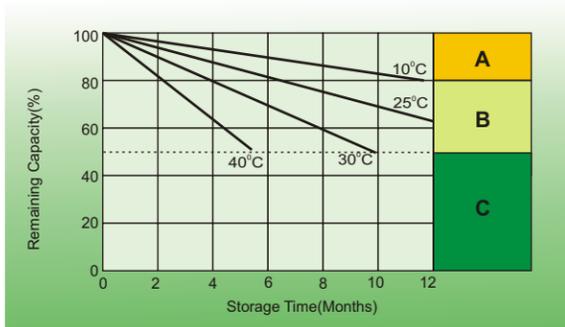
DISCHARGE CHARACTERISTICS



CHARGING CHARACTERISTICS (STANDBY USE)

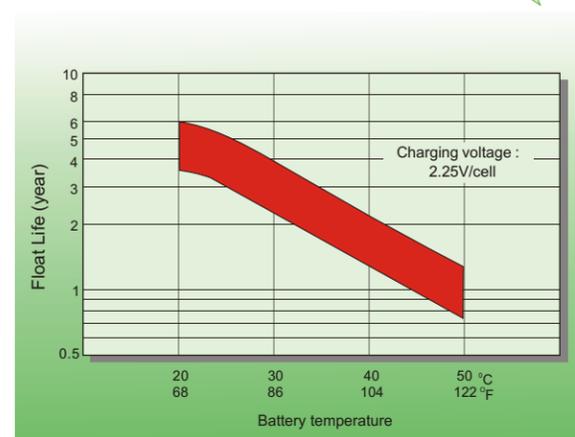


SELF DISCHARGE CHARACTERISTICS

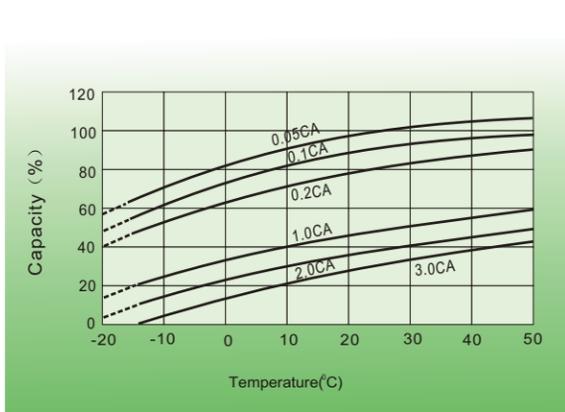


- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
Supplementary charge required before use. Optional charging way as below:
- B** 1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2.Charged for above 20hours 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.

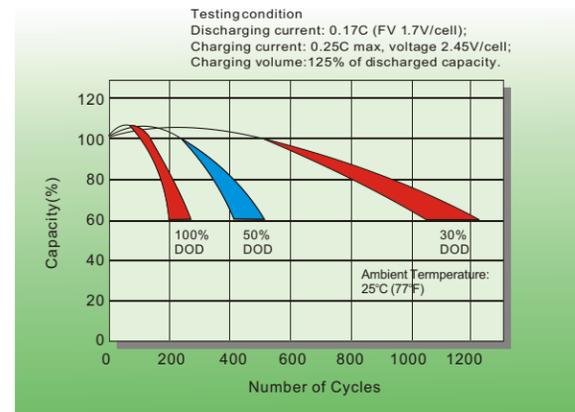
EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



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 ◆ Uninterruptible 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

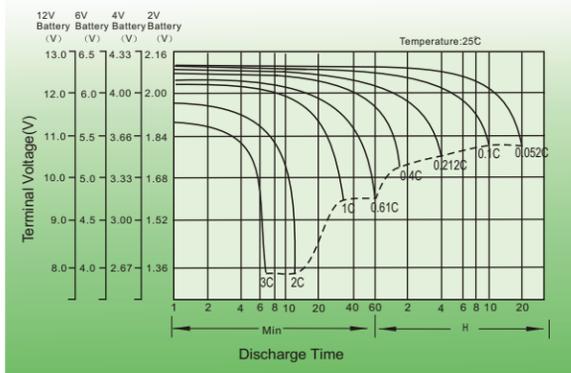
Model	Nominal Voltage (V)	Rated Capacity(Ah)				Approx Dimension						Approx Weight		Terminal type		
		20HR	10HR	5HR	1HR	Length		Width		Height		kg	lbs			
						mm	in.	mm	in.	mm	in.				mm	in.
LP6-60	6	62.4	60	51.5	36.6	185	7.3	112	4.4	205	8.07	205	8.07	9.10	20.1	T2
LP6-200H	6	210.0	190	172.0	122.0	306	12.0	168	6.6	222	8.74	228	8.98	28.0	61.7	T8
LP12-38	12	40.0	38	32.7	23.2	197	7.8	165	6.5	170	6.69	170	6.69	12.2	26.9	T6
LP12-40	12	40.0	38.5	33.1	23.5	255	10.0	97	3.8	203	7.99	203	7.99	12.5	27.6	T7
LP12-45	12	46.8	45	38.7	27.5	197	7.8	165	6.5	170	6.69	170	6.69	14.2	31.3	T6
LP12-50	12	52.0	50	43.0	30.5	257	10.1	132	5.2	200	7.87	200	7.87	15.7	34.6	T6
LP12-55	12	57.2	55	47.3	33.6	229	9.0	138	5.4	205	8.07	211	8.31	16.2	35.7	T6
LP12-60	12	62.4	60	51.5	36.6	260	10.2	168	6.6	208	8.19	214	8.43	18.4	40.6	T6
LP12-65	12	65.0	60	53.6	37.5	348	13.7	167	6.6	178	7.01	178	7.01	19.2	42.3	T6
LP12-70	12	72.8	70	60.0	42.7	348	13.7	167	6.6	178	7.01	178	7.01	21.6	47.6	T6
LP12-75	12	78.0	75	64.5	45.8	260	10.2	168	6.6	208	8.19	214	8.43	22.3	49.2	T6
LP12-80	12	83.2	80	69.0	48.8	260	10.2	168	6.6	208	8.19	214	8.43	23.8	52.5	T6
LP12-90	12	93.6	90	77.5	54.9	330	13.0	173	6.8	212	8.35	220	8.66	27.8	61.3	T11
LP12-100E	12	103.0	100	83.0	59.4	330	13.0	173	6.8	213	8.39	220	8.66	28.2	62.2	T11
LP12-100	12	104.0	100	88.0	63.8	330	13.0	173	6.8	212	8.35	220	8.66	30.6	67.5	T11
LP12-120	12	124.8	120	103.2	73.2	408	16.1	177	7.0	225	8.86	225	8.86	34.0	75.0	T11
LP12-135	12	140.4	135	116.0	82.4	345	13.6	172	6.8	274	10.79	280	11.02	41.2	90.8	T11
LP12-150	12	156.0	150	129.0	91.5	483	19.0	170	6.7	238.5	9.39	238.5	9.39	43.2	95.3	T11
LP12-180	12	187.2	180	155.0	109.8	532	20.9	207	8.1	214	8.43	220	8.66	53.6	118.2	T11
LP12-200	12	208.0	200	172.0	122.0	522	20.6	240	9.4	218	8.58	224	8.82	59.8	131.9	T11
LP12-250	12	260.0	250	215.0	152.5	522	20.6	268	10.6	220	8.66	226	8.90	72.5	159.9	T11

SUCCESS FROM HARD WORK
BUSINESS NEEDS GOOD MORALITY

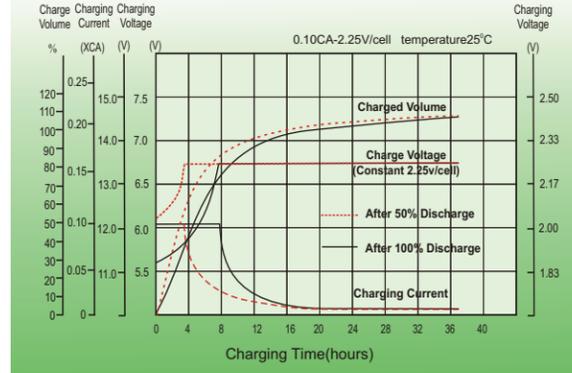


LP Performance Characteristics (Middle size)

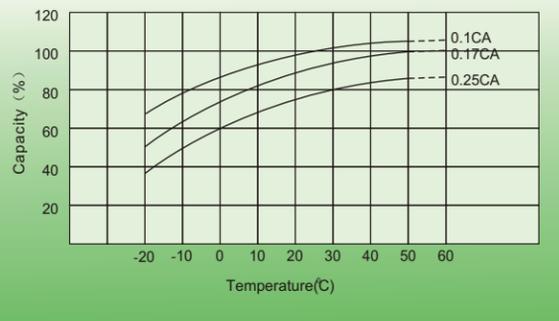
DISCHARGE CHARACTERISTICS



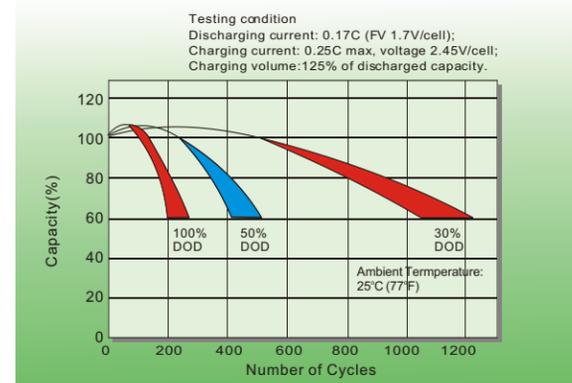
CHARGING CHARACTERISTICS (STANDBY USE)



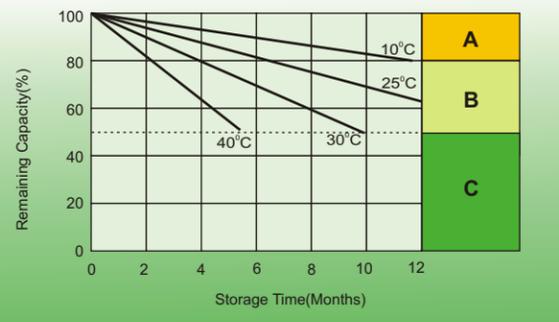
TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



CYCLE SERVICE LIFE IN RELATION TO THE DEPTH OF DISCHARGE

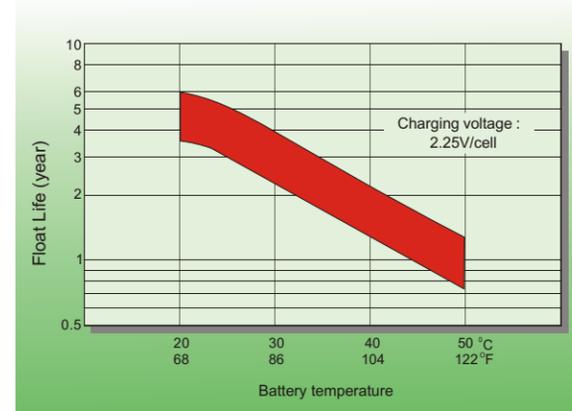


SELF DISCHARGE CHARACTERISTICS



- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way 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 8-10hours 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.
- ◆ Uninterruptible 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		kg	lbs	
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LP2-65	2	68.2	65.0	56.5	39.5	170	6.7	72	2.8	205	8.07	214	8.43	4.5	9.9	T6
LP2-100	2	105	100.0	87.0	60.7	170	6.7	72	2.8	205	8.07	214	8.43	5.8	12.8	T6
LP2-120	2	126	120.0	104.5	72.8	170	6.7	98	3.9	205	8.07	214	8.43	7.4	16.3	T7
LP2-150	2	157.6	150.0	130.5	91.1	170	6.7	98	3.9	205	8.07	214	8.43	8.4	18.5	T7
LP2-200	2	210	200.0	174.0	121.4	170	6.7	110	4.3	328	12.91	350	13.78	12.7	28.0	T11
LP2-250	2	262	250.0	217.5	151.8	170	6.7	110	4.3	328	12.91	350	13.78	13.8	30.4	T11
LP2-300	2	316	300.0	261.0	182.1	170	6.7	150	5.9	330	12.99	350	13.78	17.7	39.0	T11
LP2-350	2	368	350.0	304.5	212.5	170	6.7	150	5.9	330	12.99	350	13.78	19.3	42.6	T11
LP2-400	2	420	400.0	348.0	242.8	210	8.3	175	6.9	330	12.99	350	13.78	24.3	53.6	T11
LP2-450	2	472	450.0	391.5	273.2	210	8.3	175	6.9	330	12.99	350	13.78	26.0	57.3	T11
LP2-500	2	526	500.0	435.0	303.5	240	9.4	175	6.9	327	12.89	347.5	13.68	29.0	63.9	T11
LP2-600	2	630	600.0	522.0	364.2	300	11.8	175	6.9	330	12.99	350	13.78	35.7	78.7	T11
LP2-800	2	840	800.0	696.0	485.6	410	16.1	175	6.9	330	12.99	350	13.78	50.4	111.1	T11
LP2-1000	2	1050	1000.0	870.0	607.0	475	18.7	175	6.9	328	12.91	350	13.78	60.0	132.3	T11
LP2-1200	2	1260	1200.0	1044.0	728.4	475	18.7	175	6.9	328	12.91	350	13.78	66.4	146.4	T11
LP2-1500	2	1576	1500.0	1305.0	910.5	403	15.9	354	13.9	339	13.35	349	13.74	96.0	211.7	T11
LP2-2000	2	2100	2000.0	1740.0	1214.0	490	19.3	350	13.8	339	13.35	349	13.74	121.0	266.8	T11
LP2-3000	2	3150	3000.0	2610.0	1821.0	709	27.9	350	13.8	337	13.27	347	13.66	180.0	396.9	T11

UPS



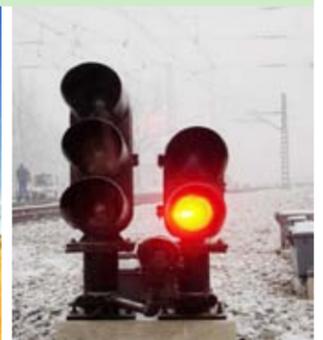
Telecom



Power System

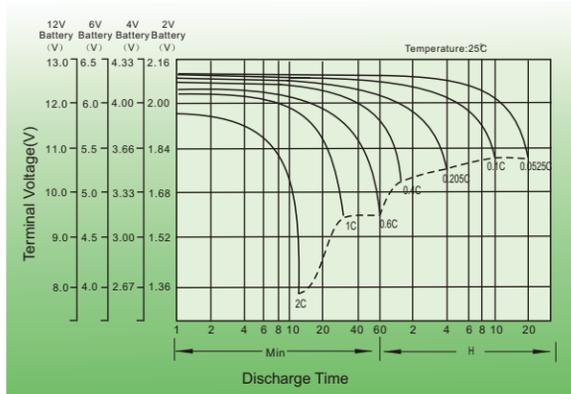


Railway Signal

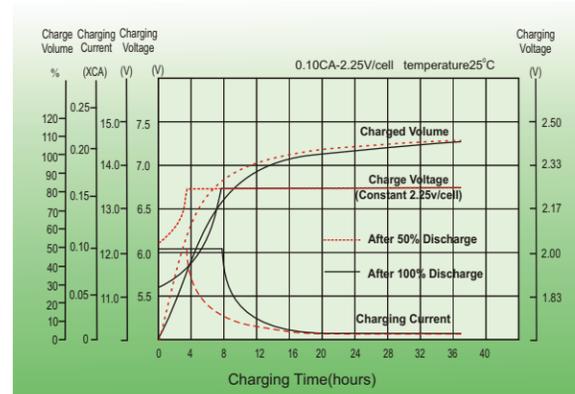


LP II Performance Characteristics

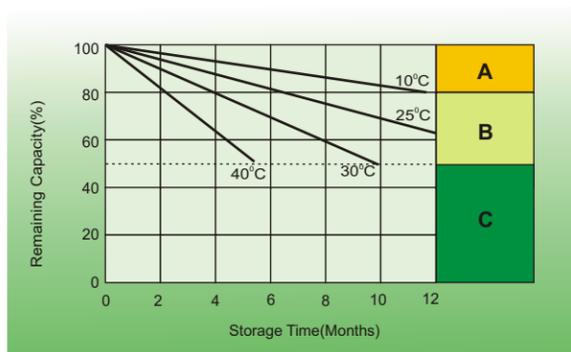
DISCHARGE CHARACTERISTICS



CHARGING CHARACTERISTICS (STANDBY USE)

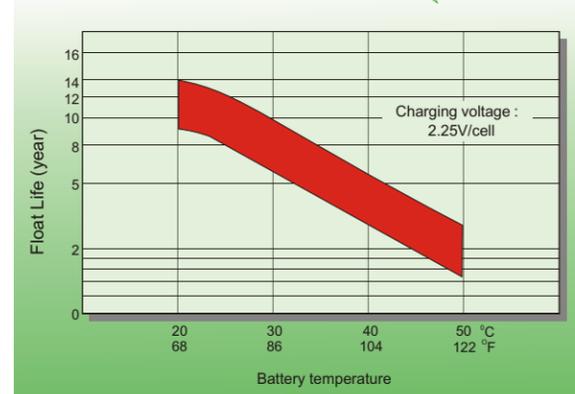


SELF DISCHARGE CHARACTERISTICS

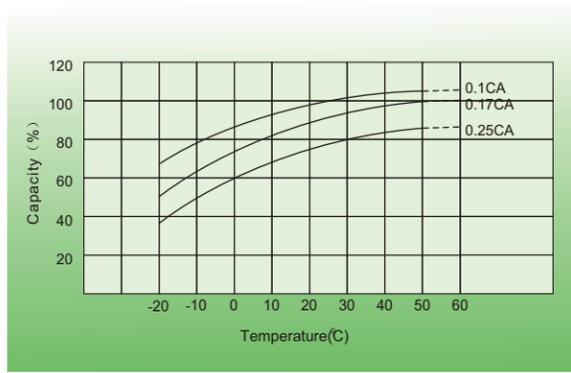


- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. Optional charging way as below:
 1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
 2.Charged for above 20hours 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.

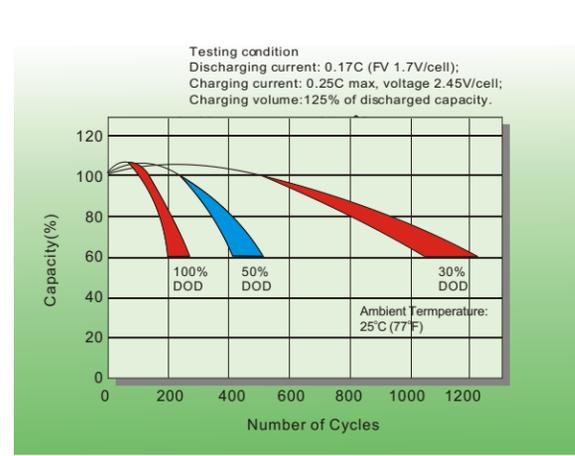
EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



CYCLE SERVICE LIFE IN RELATION TO THE DEPTH OF DISCHARGE



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, optimized 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: increases the strength of the battery container. (Flame-retardant ABS is optional)

LPC Models and Parameters

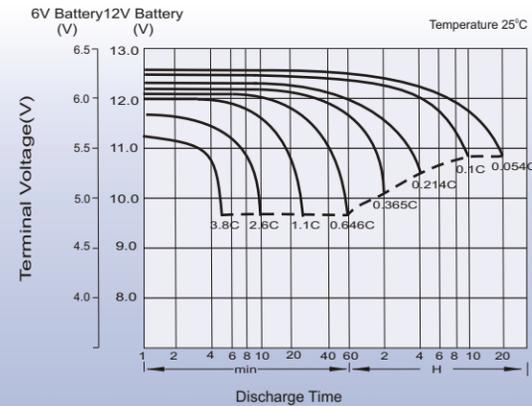
Typical Applications

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

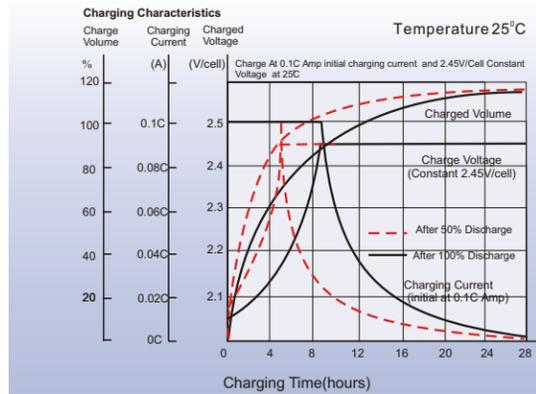
Model	Nominal Voltage (V)	Rated Capacity(AH)	Approx Dimension								Approx Weight		Terminal type
			10HR		Length		Width		Height		kg	lbs	
			1.80V/cell		mm	in.	mm	in.	mm	in.			
LPC6-5.6	6	5.6	70	2.76	47	1.85	100	3.94	106	4.17	0.90	1.98	T2
LPC6-13	6	13	151	5.94	50.5	1.99	94	3.70	100	3.94	2.05	4.52	T2
LPC12-3.5	12	3.2	134	5.28	67	2.64	59.5	2.34	65.5	2.58	1.35	2.98	T1
LPC12-5.6	12	5	90	3.54	70	2.76	101	3.98	107	4.21	1.83	4.04	T1
LPC12-7.2	12	7.2	151	5.94	65	2.56	93.5	3.68	99.5	3.92	2.50	5.51	T2
LPC12-8.0	12	8	151	5.94	65	2.56	93.5	3.68	99.5	3.92	2.47	5.45	T2
LPC12-13	12	13	151	5.94	98	3.86	95	3.74	101	3.98	4.05	8.93	T2
LPC12-18	12	18	181.5	7.15	76.5	3.01	167.5	6.59	167.5	6.59	6.00	13.2	T3
LPC12-24	12	24	166	6.54	175	6.89	126	4.96	126	4.96	8.57	18.9	T12
LPC12-24H	12	24	164	6.46	125	4.92	176	6.93	176	6.93	9.10	20.1	T3-A
LPC12-26	12	26	166	6.54	175	6.89	125	4.92	125	4.92	9.35	20.6	T3
LPC12-33	12	33	195	7.68	130	5.12	164	6.46	182	7.17	11.65	25.7	T5
LPC12-38	12	38	197	7.76	165	6.50	170	6.69	170	6.69	14.20	31.3	T6
LPC12-50	12	50	257	10.12	132	5.20	200	7.87	200	7.87	17.60	38.8	T6
LPC12-55	12	55	229	9.02	138	5.43	210	8.27	230	9.06	17.70	39.0	T9
LPC12-75	12	75	260	10.24	168	6.61	208	8.19	214	8.43	22.30	49.2	T6
LPC12-100	12	100	330	12.99	173	6.81	212	8.35	220	8.66	30.60	67.5	T11
LPC12-120	12	120	408	16.06	177	6.97	225	8.86	225	8.86	37.30	82.2	T11
LPC12-150	12	150	483	19.02	170	6.69	238.5	9.39	238.5	9.39	43.20	95.3	T11
LPC12-200	12	200	522	20.55	240	9.45	218	8.58	224	8.82	62.20	137.2	T11

LPC Performance Characteristics

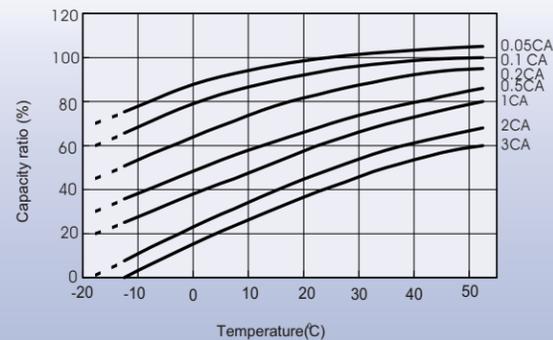
DISCHARGE CHARACTERISTICS



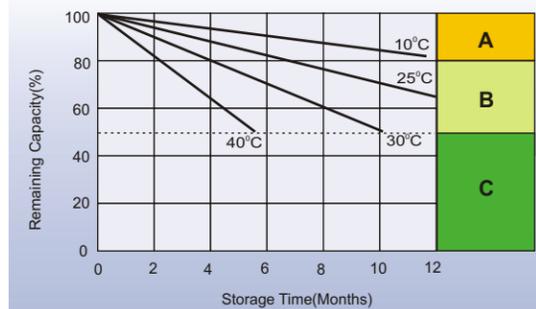
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



SELF DISCHARGE CHARACTERISTICS

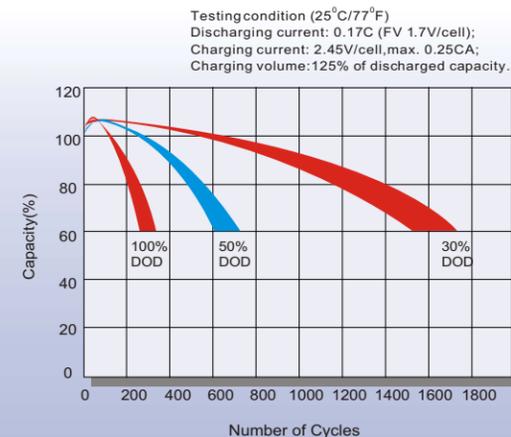


A No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required)

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 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.

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: increases the strength of the 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 stations
- ◆ Survey and Mapping system
- ◆ Emergency lighting
- ◆ Railway crossings
- ◆ Traffic lights
- ◆ Street lighting
- ◆ Lawn lamps
- ◆ 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	kg		lbs	
		1.80V/cell	1.80V/cell	1.80V/cell	1.75V/cell	1.80V/cell	mm	in.	mm	in.	mm	in.					mm
LPS12-7.5	12	7.5	6.8	6.5	5.8	4.0	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	14.2	9.8	181.5	7.15	76.5	3.01	167.5	6.59	167.5	6.59	5.70	12.57	T3
LPS12-20	12	20.7	18.9	18	16.0	11.0	181.5	7.15	76.5	3.01	167.5	6.59	167.5	6.59	6.00	13.23	T3
LPS12-30	12	30.0	27.4	26	23.1	15.9	164	6.46	125	4.92	176	6.93	175	6.89	9.10	20.07	T3-A
LPS12-36	12	36.8	33.6	32	28.5	19.5	195	7.68	130	5.12	164	6.46	178	7.01	11.2	24.70	T5
LPS6-115	6	115.0	105.0	100	87.0	60.8	195	7.68	170	6.69	206.5	8.13	212.5	8.37	16.5	36.38	T6-A
LPS12-40	12	43.7	40.0	38	33.2	23.1	197	7.76	165	6.50	170	6.69	170	6.69	13.2	29.11	T6
LPS12-45FT	12	46.0	42.0	40	34.9	24.3	277	10.91	106	4.17	222	8.74	222	8.74	15.1	33.30	T6
LPS12-50	12	50.0	45.0	42.9	37.4	26.1	197	7.76	165	6.50	170	6.69	170	6.69	14.5	31.97	T6
LPS12-55	12	57.5	52.5	50	43.6	30.4	257	10.12	132	5.20	200	7.87	200	7.87	17.6	38.81	T6
LPS12-60FT	12	63.3	57.8	55	48.0	33.4	277	10.91	106	4.17	222	8.74	222	8.74	17.3	38.15	T6
LPS12-75	12	74.8	68.2	65	56.7	39.5	348	13.70	167	6.57	178	7.01	178	7.01	21.2	46.75	T6
LPS12-85FT	12	86.3	78.7	75	65.5	45.6	564	22.20	114	4.49	187	7.36	187	7.36	26.0	57.33	T6



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

Model	Nominal Voltage (V)	Rated Capacity (AH)					Approx Dimension								Approx Weight		Terminal type
		100HR	20HR	10HR	5HR	1HR	Length		Width		Height		Total Height		kg	lbs	
		1.80V/cell	1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LPS12-85	12	86.3	78.7	75	65.5	45.6	260	10.24	168	6.61	208	8.19	214	8.43	24.2	53.36	T6
LPS12-115	12	110	100	95.2	83	57.9	306	12.05	168	6.61	208	8.19	230	9.06	30.6	67.47	T14
LPS12-115FT	12	115	105	100	87	60.8	508	20	110	4.33	238.5	9.39	238.5	9.39	32.0	72.56	T13
LPS12-135	12	138	126	120	104.5	72.9	408	16.06	177	6.97	225	8.86	225	8.86	36.6	80.70	T11
LPS12-145FT	12	143.8	131.3	125	109.1	75.9	551	21.69	110	4.33	288	11.34	288	11.34	41.5	91.51	T6
LPS12-160	12	161	147	140	122.2	85.1	345	13.58	172	6.77	274	10.79	280	11.02	45.5	100.33	T11
LPS12-170FT	12	173	157.6	150	131	91.1	551	21.69	110	4.33	288	11.34	288	11.34	46.6	102.75	T6
LPS12-230	12	230	210	200	174.5	121.5	522	20.55	240	9.45	218	8.58	224	8.82	64.0	141.12	T11
LPS12-285	12	287.5	262.5	250	218	151.9	522	20.55	268	10.55	220	8.66	226	8.90	74.0	163.17	T11

LPS II Models and Parameters (2V Series)

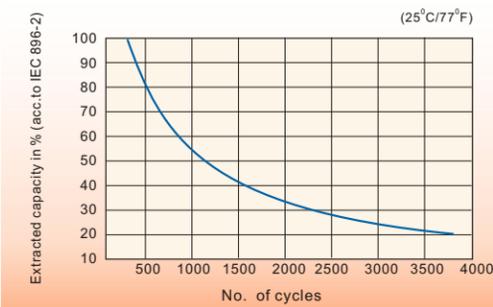
Typical Applications

- Green energy systems
- Communication systems

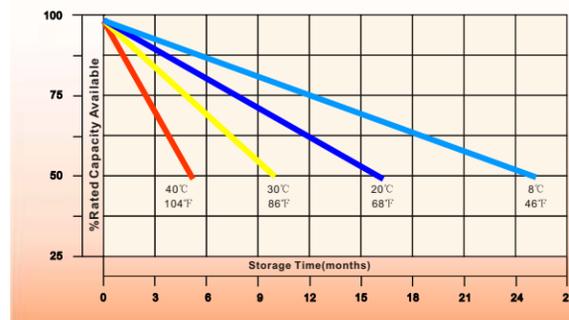
Model	Nominal Voltage (V)	Rated Capacity (AH)					Approx Dimension								Approx Weight		Terminal type
		100HR	20HR	10HR	5HR	1HR	Length		Width		Height		Total Height		kg	lbs	
		1.80V/cell	1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LPS2-115	2	115	107	100	88	58.8	170	6.69	72	2.83	205	8.07	212	8.35	5.90	13.01	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	18.74	T7
LPS2-230	2	230	214	200	175.5	117.6	170	6.69	110	4.33	328	12.91	350	13.78	13.7	30.21	T11
LPS2-285	2	288	268	250	219.5	147.0	170	6.69	110	4.33	328	12.90	350	13.80	14.5	32	T11
LPS2-350	2	345	322	300	263.5	176.4	170	6.69	150	5.91	328	12.90	350	13.80	18.8	40.35	T11
LPS2-400	2	403	374	350	307.5	205.8	170	6.69	150	5.91	330	12.99	350	13.78	19.3	42.56	T11
LPS2-450	2	460	428	400	351.5	235.2	210	8.27	175	6.89	330	12.99	350	13.78	25.5	56.23	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	57.33	T11
LPS2-550	2	575	536	500	439.5	294.0	240	9.45	175	6.89	327.5	12.89	347.5	13.68	30.0	66.15	T11
LPS2-700	2	690	642	600	527	352.8	300	11.81	175	6.89	330	12.99	350	13.78	36.6	80.70	T11
LPS2-900	2	920	856	800	703	470.4	410	16.14	175	6.89	330	12.99	350	13.78	51.8	114.22	T11
LPS2-1100	2	1150	1070	1000	878.5	588.0	475	18.70	175	6.89	328	12.91	350	13.78	61.8	136.27	T11
LPS2-1350	2	1380	1284	1200	1054.5	705.5	475	18.70	175	6.89	328	12.91	350	13.78	68.9	151.92	T11
LPS2-1700	2	1730	1606	1500	1318	881.9	403	15.87	354	13.94	339	13.35	349	13.74	96.0	211.68	T11
LPS2-2300	2	2300	2140	2000	1757.5	1175.9	490	19.29	350	13.78	339	13.35	349	13.74	127.0	280.04	T11
LPS2-2800	2	2880	2676	2500	2197	1469.9	490	19.29	350	13.78	339	13.35	349	13.74	133.6	294.59	T11
LPS2-3500	2	3450	3210	3000	2636	1763.9	709	27.91	350	13.78	337	13.30	347	13.66	180.0	396.90	T11

LPS Performance Characteristics (6V, 12V Series)

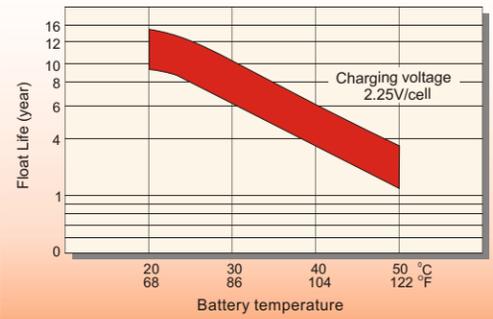
CYCLE SERVICE LIFE



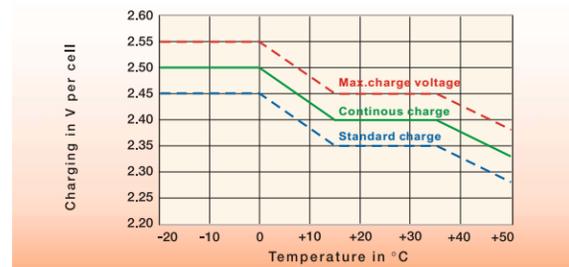
SELF-DISCHARGE AT DIFFERENT TEMPERATURES



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



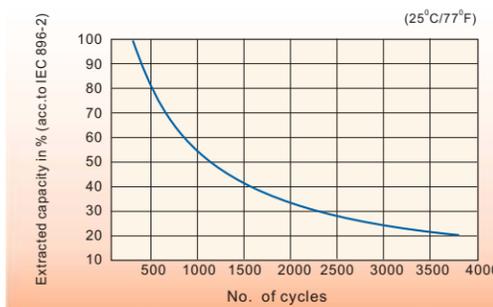
CYCLIC APPLICATION CHARGE MODE



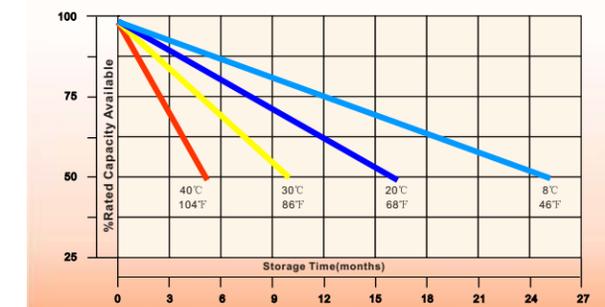
- 1) With switch regulator (two-step controller) charge on curve max. charge voltage for max. 2 hrs/day then switch over to continuous charge
- 2) Standard charge without switching
- 3) Boost charge (Equalizing charge with external generator) charge on curve continuous charge for max. 5 hrs/month, then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

LPSII Performance Characteristics

CYCLE SERVICE LIFE

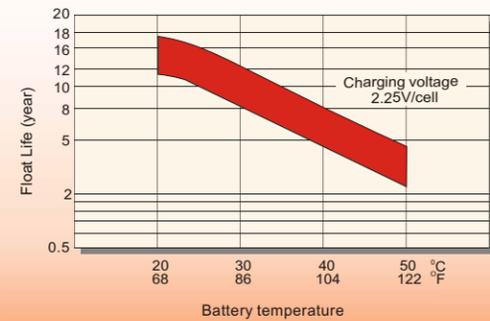


SELF-DISCHARGE AT DIFFERENT TEMPERATURES

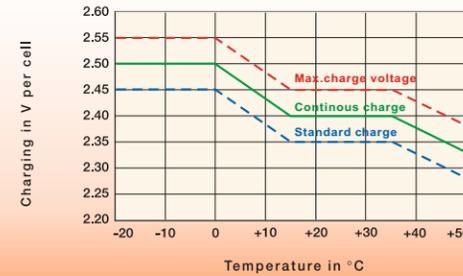


LPSII Performance Characteristics

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: increases the strength of the battery container. (Flame-retardant ABS is optional)
- ◆ Unique vent valve design: controls water loss and prevents air and sparks from entering

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

Typical Applications

- ◆ UPS and EPS
- ◆ Emergency light
- ◆ Railway signal and aircraft signal system
- ◆ Marine and power station
- ◆ 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...

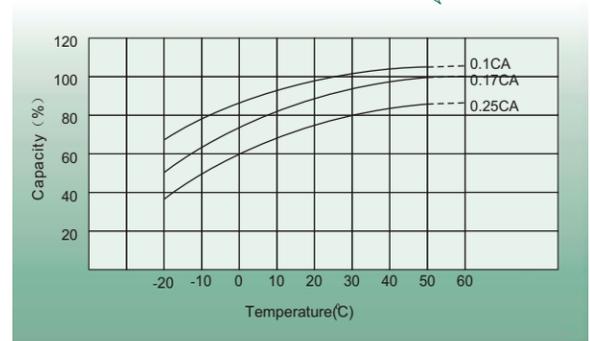
ENVIRONMENTAL FRIENDLY

Model	Nominal Voltage (V)	Rated Capacity (AH)				Approx Dimension								Approx Weight		Terminal type
		20HR	10HR	5HR	1HR	Length		Width		Height		Total Height		kg	lbs	
		1.80V/cell	1.80V/cell	1.75V/cell	1.60V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LPL4-8.0	4	8.48	8	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	6.5	5.64	4.00	150	5.91	34	1.34	94	3.70	100	3.94	1.26	2.78	T2
LPL6-9.0	6	9.54	9	7.81	5.54	151	5.94	51	2.01	94	3.70	100	3.94	1.70	3.75	T2
LPL6-11	6	11.70	11	9.54	6.77	151	5.94	51	2.01	94	3.70	100	3.94	1.95	4.30	T2
LPL6-18	6	19.08	18	15.62	11.1	157	6.18	83	3.27	125	4.92	125	4.92	3.21	7.08	T3-A
LPL12-4.5	12	4.78	4.5	3.9	2.77	151	5.94	53	2.09	93	3.66	99	3.90	1.90	4.19	T1
LPL12-4.5L	12	4.78	4.5	3.9	2.77	195	7.68	47	1.85	70	2.76	76	2.99	1.87	4.12	T1/T2
LPL12-7.0	12	7.42	7	6.05	4.31	151	5.94	65	2.56	93.5	3.68	99.5	3.92	2.45	5.40	T2
LPL12-12	12	12.70	12	10.4	7.38	151	5.94	98	3.86	95	3.74	101	3.98	3.85	8.49	T2
LPL12-18	12	19.08	18	15.62	11.0	181.5	7.15	77	3.03	167.5	6.59	167.5	6.59	5.70	12.57	T3
LPL12-24H	12	25.40	24	20.8	14.8	164	6.46	125	4.92	174	6.85	174	6.85	8.45	18.63	T12
LPL12-24	12	25.40	24	23.8	20.6	166	6.54	175	6.89	125	4.92	125	4.92	7.80	17.20	T12
LPL12-26	12	27.60	26	22.6	16.0	166	6.54	175	6.89	125	4.92	125	4.92	8.40	18.52	T3
LPL12-28H	12	29.60	28	24.3	17.2	164	6.46	125	4.92	176	6.93	176	6.93	9.10	20.07	T3-A
LPL12-28	12	29.60	28	24.3	17.2	166	6.54	175	6.89	125	4.92	125	4.92	8.60	18.96	T3

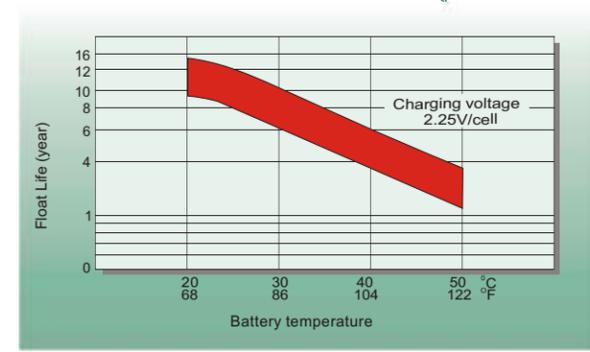
LPL Models and Parameters (6V, 12V Series)

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	
LPL6-100	6	107.0	100	87.0	62.0	195	7.68	170	6.69	206.5	8.13	212.5	8.37	16.5	36.38	T6-A
LPL12-38	12	40.0	38	33.1	23.6	197	7.76	165	6.50	170	6.69	170	6.69	13.2	29.11	T6
LPL12-45	12	45.0	42	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	47.9	34.1	229	9.02	138	5.43	210	8.27	230	9.06	17.7	39.03	T9
LPL12-60	12	64.2	60	52.2	37.2	260	10.24	168	6.61	210	8.27	216	8.50	20.7	44.10	T6
LPL12-65	12	69.6	65	56.5	40.3	348	13.70	167	6.57	178	7.01	178	7.01	21.2	46.75	T6
LPL12-70	12	75.0	70	60.9	43.4	348	13.70	167	6.57	178	7.01	178	7.01	24.0	52.92	T6
LPL12-75	12	78.0	75	65.5	46.5	260	10.24	168	6.61	208	8.19	214	8.43	22.7	50.05	T6
LPL12-90H	12	96.4	90	78.5	55.8	306	12.05	168	6.61	208	8.19	230	9.06	27.1	59.76	T14
LPL12-100	12	107.0	100	87.0	62.0	330	12.99	173	6.81	212	8.35	220	8.66	32.0	70.56	T11
LPL12-120	12	132.2	120	104.5	74.4	408	16.06	177	6.97	225	8.86	225	8.86	36.6	80.70	T11
LPL12-140	12	152.0	140	122.0	86.8	345	13.58	172	6.77	274	10.79	280	11.02	45.5	100.33	T11
LPL12-150	12	160.6	150	130.5	93.0	483	19.02	170	6.69	238.5	9.39	238.5	9.39	47.2	104.08	T11
LPL12-200	12	214.0	200	174.0	124.0	522	20.55	240	9.45	218	8.58	224	8.82	64.0	141.12	T11
LPL12-250	12	268.0	250	217.5	155.0	522	20.55	268	10.55	220	8.66	226	8.90	74.0	163.17	T11

TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



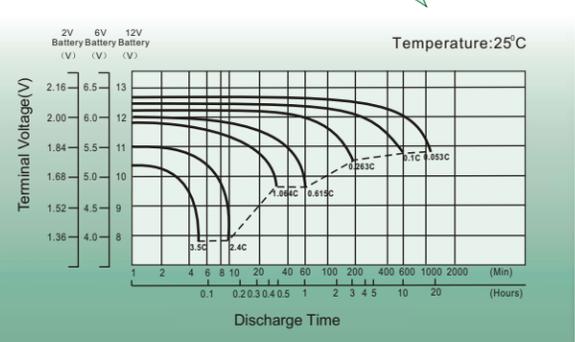
LPL II Models and Parameters (2V Series)

Typical Applications

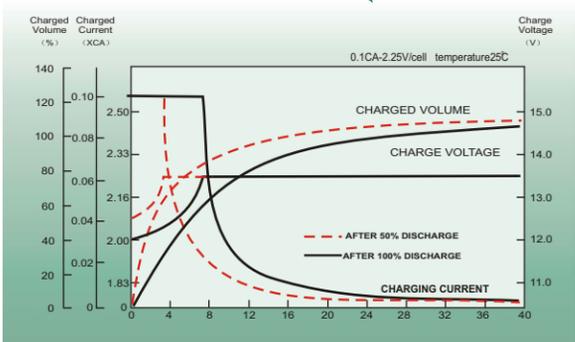
- ◆ Tele-communication central station (wired or cellular)
- ◆ Power system communication, military communication, etc.
- ◆ Network communication including: data transmission, television signal transmission, etc.
- ◆ Uninterruptable Power System (UPS- for Telecom)
- ◆ EPS

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

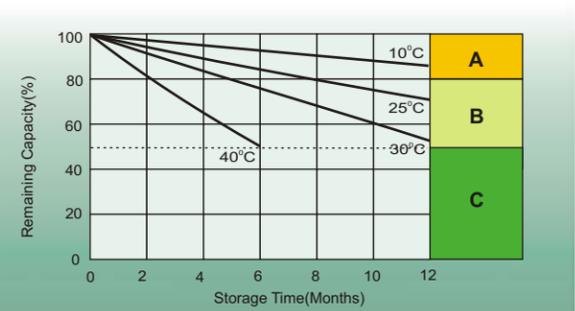
DISCHARGE CHARACTERISTICS



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 way 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.

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	214	8.35	5.8	13.01	T6
LPL2-150	2	160	150	133.0	90.1	170	6.69	98	3.86	205	8.07	214	8.35	8.4	18.74	T7
LPL2-200	2	214	200	177.5	120.1	170	6.69	110	4.33	328	12.91	350	13.78	13.7	30.21	T11
LPL2-250	2	266	250	222.0	150.2	170	6.69	110	4.33	328	12.90	350	13.80	14.5	31.97	T11
LPL2-300	2	320	300	266.0	180.2	170	6.69	150	5.91	330	12.99	350	13.78	18.8	41.45	T11
LPL2-400	2	426	400	355.0	240.3	210	8.27	175	6.89	330	12.99	350	13.78	25.5	56.23	T11
LPL2-450	2	480	450	399.5	270.5	210	8.27	175	6.89	330	12.99	350	13.78	26.0	57.33	T11
LPL2-500	2	534	500	443.5	300.3	240	9.45	175	6.89	328	12.89	348	13.68	30.5	67.25	T11
LPL2-600	2	640	600	532.5	360.4	300	11.80	175	6.89	330	13.00	350	13.80	36.6	84.20	T11
LPL2-800	2	854	800	710.0	480.5	410	16.10	175	6.89	330	13.00	350	13.80	50.4	111.13	T11
LPL2-1000	2	1068	1000	887.5	600.7	475	18.70	175	6.89	328	12.90	350	13.80	60.0	132.30	T11
LPL2-1200	2	1280	1200	1065.0	720.8	475	18.70	175	6.89	328	12.91	350	13.78	66.4	146.41	T11
LPL2-1500	2	1600	1500	1331.0	901.0	403	15.87	354	13.94	339	13.35	349	13.74	96.0	211.68	T11
LPL2-2000	2	2134	2000	1775.0	1201.3	490	19.29	350	13.78	339	13.35	349	13.74	127.0	280.04	T11
LPL2-3000	2	3202	3000	2662.0	1802.0	709	27.90	350	13.78	337	13.30	347	13.66	180.0	396.90	T11

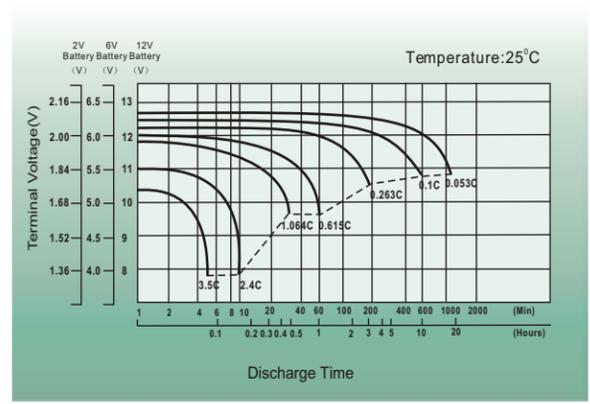
Specifications subject to change without notice.



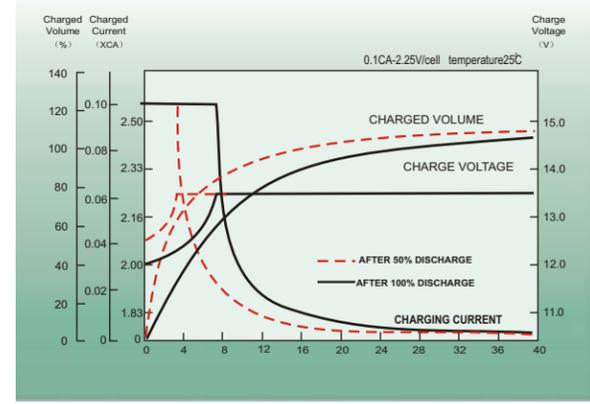
LPX SERIES - HIGH RATE / UPS

LPL II Performance Characteristics

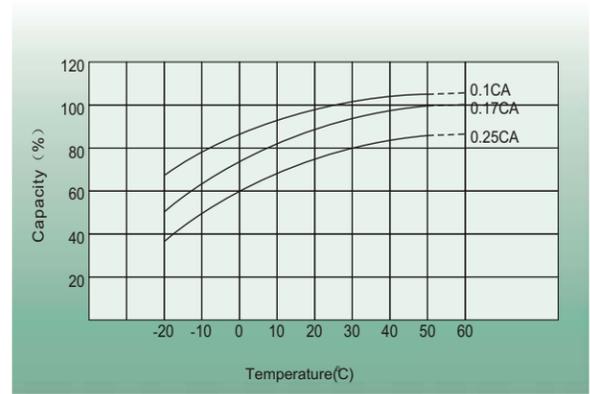
DISCHARGE CHARACTERISTICS



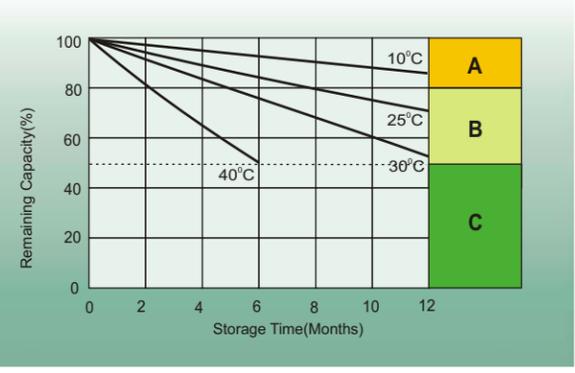
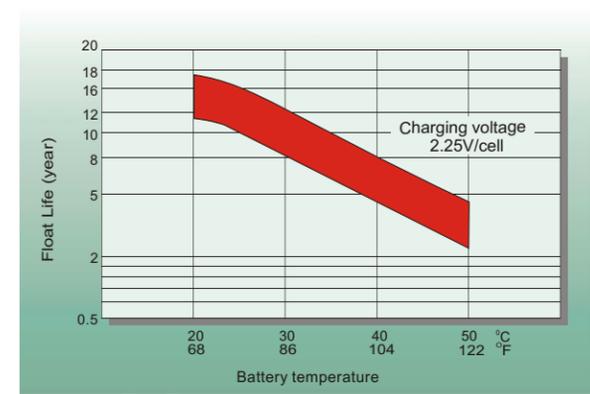
CHARGING CHARACTERISTICS



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 way 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.

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

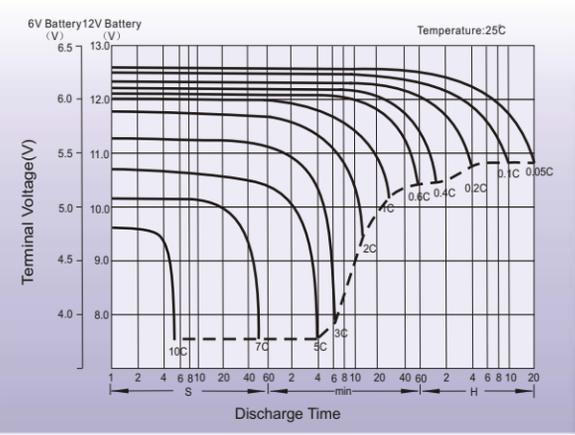
- ◆ UPS (High rate)
- ◆ High power backup supply
- ◆ Emergency power supply
- ◆ Starting system
- ◆ Power tools
- ◆ Emergency lighting
- ◆ Electric starting

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		kg	lbs		
						mm	in.	mm	in.	mm	in.	mm	in.				
LPX12-1.2	12	5.0	1.1	1.0	0.93	97	3.82	48.5	1.91	52.5	2.07	58.5	2.30	0.59	1.30	T1	
LPX12-2.2	12	8.2	2.1	1.9	1.6	178	7.01	35.0	1.38	60	2.36	66	2.60	0.97	2.14	T1	
LPX12-3.2	12	12.5	3.1	2.9	2.4	134	5.28	67.0	2.64	59.5	2.34	65.5	2.58	1.35	2.98	T1	
LPX12-5.4	12	20.7	4.8	4.5	3.7	90	3.54	70.0	2.76	101	3.98	107	4.21	1.83	4.04	T1	
LPX12-6.0	12	25.6	6	5.6	4.6	151	5.94	65.0	2.56	93.5	3.68	99.5	3.92	2.26	4.98	T2	
LPX12-7.0	12	29.0	7	6.5	5.4	151	5.94	65.0	2.56	93.5	3.68	99.5	3.92	2.50	5.51	T2	
LPX12-7.6	12	32.2	7.6	7.1	5.9	151	5.94	65.0	2.56	93.5	3.68	99.5	3.92	2.47	5.45	T2	
LPX12-9.0	12	33.3	8	7.1	6.0	151	5.90	65.0	2.6	93.5	3.68	99.5	3.92	2.66	5.87	T2	
LPX12-12	12	49.8	12	10.5	8.8	151	5.94	98.0	3.86	95.0	3.74	101	3.98	4.05	8.93	T2	
LPX12-17	12	63.4	17	16.1	12.3	181.5	7.15	76.5	3.01	167.5	6.59	167.5	6.59	5.78	12.74	T12	
LPX12-18	12	67.4	18	17.1	13.0	181.5	7.15	76.5	3.01	167.5	6.59	167.5	6.59	6.00	13.23	T3	
LPX12-20	12	81.4	20	18.5	13.9	181.5	7.15	77.0	3.03	166.0	6.54	166.0	6.54	6.90	15.21	T12	
LPX12-24	12	99.8	24	21.8	16.9	166	6.54	175.0	6.89	125.0	4.92	125	4.92	8.60	18.96	T3	
LPX12-35	12	120.1	33.3	30.3	22.9	195	7.68	130.0	5.12	164.0	6.46	180.0	7.09	10.5	23.15	T10	
LPX12-38	12	126.3	36.6	32.8	25.3	197	7.76	165.0	6.50	170.0	6.69	170	6.69	13.2	29.11	T6	
LPX12-65	12	221.2	65	55.5	41.8	348	13.70	167.0	6.57	178	7.01	178	7.01	21.2	46.75	T6	
LPX12-72	12	237.7	72	65.5	46.2	260	10.24	168.0	6.61	208.0	8.19	214	8.43	22.3	49.17	T6	
LPX12-100	12	356.1	100	89.5	68.2	330	12.99	173.0	6.81	212	8.35	220	8.66	30.6	67.47	T11	
LPX12-120	12	483.8	120	105.0	85.3	408	16.06	177.0	6.97	225.0	8.86	225	8.86	37.3	82.25	T11	
LPX12-150	12	487.5	150	131.0	100.4	483	19.02	170.0	6.69	238.5	9.39	238.5	9.39	43.2	95.26	T11	
LPX12-200	12	675.8	200	174.5	136.0	522	20.55	240.0	9.45	218.0	8.58	224	8.82	62.2	137.15	T11	
LPX12-250	12	783.3	250	218.0	165.5	522	20.55	268.0	10.55	220	8.66	226	8.90	72.5	159.86	T11	
LPX6-200	6	675.8	200	174.5	136.0	322	12.68	178.0	7.01	226.0	8.90	232	9.13	30.3	66.81	T11	

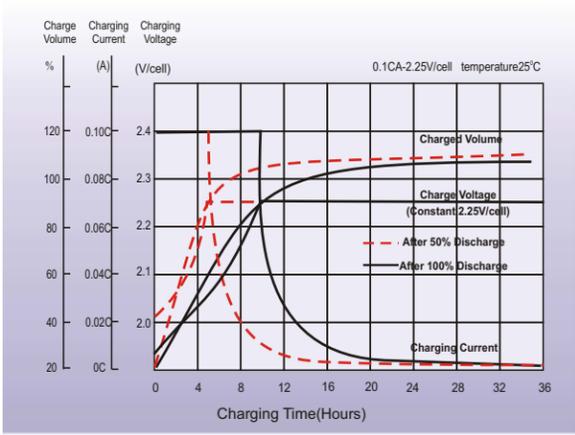


LPX Performance Characteristics

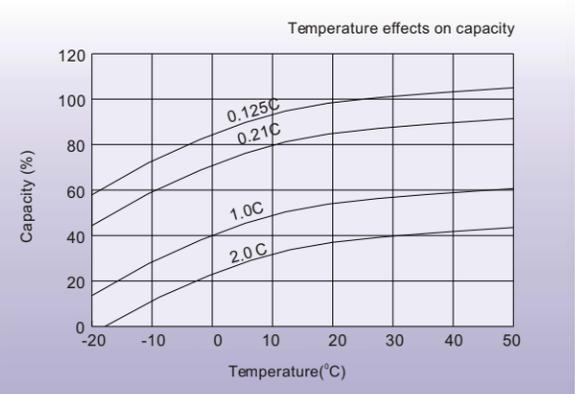
DISCHARGE CHARACTERISTICS



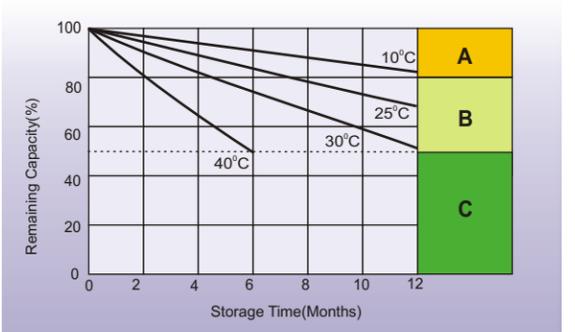
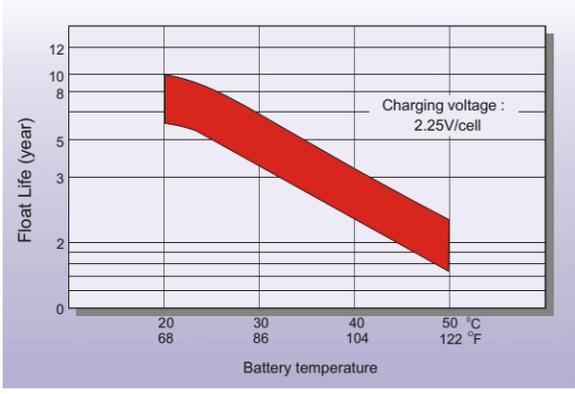
CHARGING CHARACTERISTICS



TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY



EFFECT OF TEMPERATURE ON LONG TERM FLOAT DESIGNED LIFE



SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

- 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 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: reduces water loss and prevents air or sparks from entering
- ◆ Thick plates, special formula of paste and plate making process for a long service life
- ◆ ABS material: increases the strength of the battery container (Flame-retardant ABS is optional)

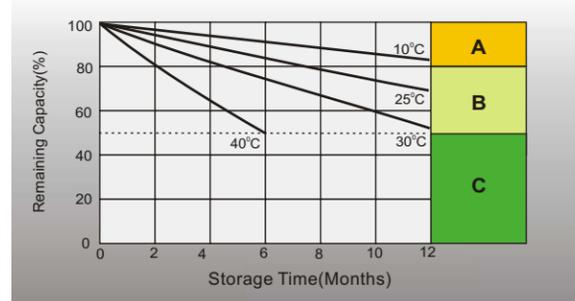
LPF Models and Parameters

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		kg	lbs	
		1.80V/cell	1.75V/cell	1.75V/cell	1.67V/cell	mm	in.	mm	in.	mm	in.	mm	in.			
LPF12-50	12	50	48.9	43.8	32.0	390	15.4	105	4.13	200	7.9	200	7.9	18.5	40.8	M6
LPF12-100	12	100	96.8	78.6	63.4	394	15.5	110	4.33	286	11.3	286	11.3	31.5	69.5	M6/M8
LPF12-150	12	150	146.4	131.5	96.0	551	21.7	110	4.33	288	11.3	288	11.3	46.0	101.4	M6/M8
LPF12-150V	12	150	146.4	136.5	101.0	550	21.7	125	4.92	281.5	11.1	281.5	11.1	50.6	111.5	M6
LPF12-180	12	170	168.8	151.0	110.3	550	21.7	125	4.92	281.5	11.1	281.5	11.1	51.0	112.5	M6
LPF12-200	12	200	195.2	175.0	118.1	560	22.0	126	5.0	320	12.6	320	12.6	59.5	131.2	M8
LPF12-40	12	40	39.8	37.8	27.6	277	10.9	106	4.17	222	8.7	222	8.7	15.1	33.3	M6
LPF12-55	12	55	53.6	48.2	35.9	277	10.9	106	4.17	222	8.7	222	8.7	17.3	38.1	M6
LPF12-70	12	70	68.4	61.5	44.8	564	22.2	114	4.49	187	7.4	187	7.4	25.5	56.2	M6
LPF12-75	12	75	73.3	65.5	48.0	564	22.2	114	4.49	187	7.4	187	7.4	26.0	57.3	M6
LPF12-90	12	90	88.8	82.0	61.4	394	15.5	110	4.33	285	11.2	285	11.2	31.0	68.4	M6
LPF12-100A	12	100	96.8	87.0	63.7	508	20.0	110	4.33	238.5	9.4	238.5	9.4	32.0	70.6	M6
LPF12-125	12	125	122.4	109.5	80.0	551	21.7	110	4.3	288	11.3	288	11.3	41.5	91.5	M6

LPF Performance Characteristics

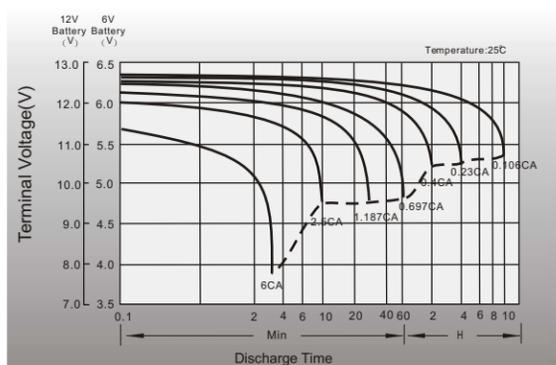


SELF DISCHARGE CHARACTERISTICS AND COMPLEMENTARY CHARGE METHODS

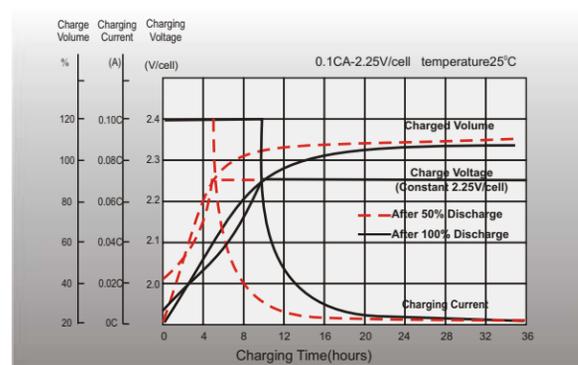
- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
 1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
 2.Charged for above 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.

BATTERY CARE AND MAINTENANCE

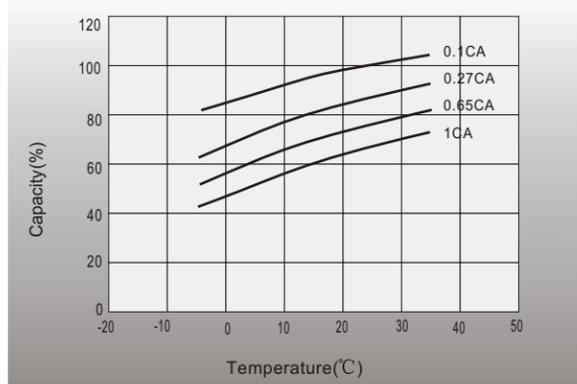
DISCHARGE CHARACTERISTICS



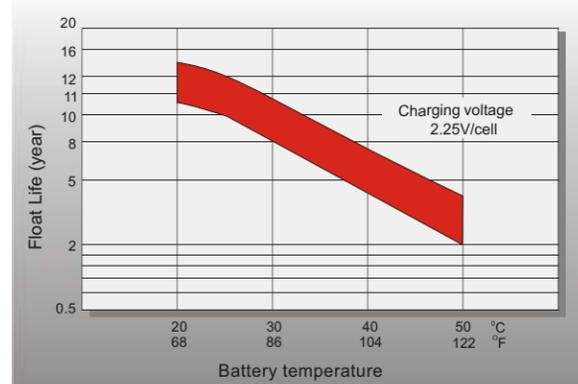
CHARGING CHARACTERISTICS



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 continually 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. It is important to store the battery in a well ventilated area, away from fire or any heat supply. When storing the battery, take it off the charger and keep it in a dry and cool place. Please supplement charge before use when the battery has been stored for a long period of time.

Cautions:

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

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 undergo an intensive training program, and learns the latest in customer support techniques, using state of the art customer management systems software.

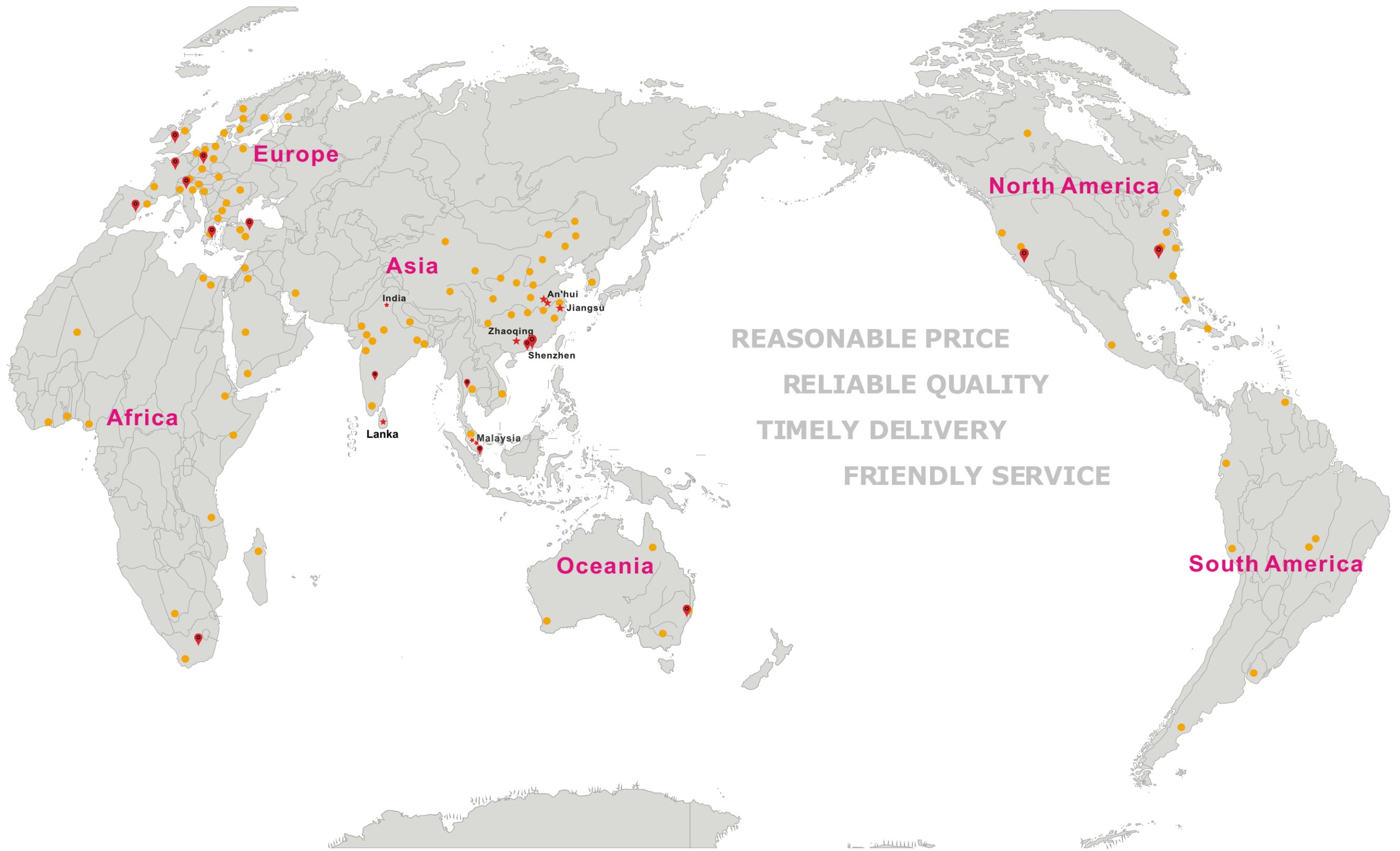
We are in the business of fulfilling our customer's "wants and needs", whether it be providing general information, detailed order updates, or post order follow up. We will go the "extra mile" to earn your business, transaction after transaction.

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

LEOCH factory

LEOCH sales office

Customers



REASONABLE PRICE
RELIABLE QUALITY
TIMELY DELIVERY
FRIENDLY SERVICE