

WARNING: Read this document before charging or using battery. Failure to follow the below instructions may result in property damage, personal injury and/or loss of life.

IMPORTANT SAFETY INSTRUCTIONS AND WARNINGS

- **You must read these safety instructions and warnings carefully before charging or using Lithium Polymer (Li-Po) battery from FullyMax, and keep this document safely for future reference.**
- While FullyMax believes that the use of Li-Po batteries in radio-controlled models is practical as well as desirable for the modeler, there are certain dangers associated with such use. It is important to follow these instructions to limit those dangers. Li-Po batteries, especially for our Medium Power series (MP), High Power series (HP series) & eXtreme Power series (XP series) store a large amount of energy and should be treated with extreme caution. Additionally, it has been determined that Li-Po batteries, when not properly used, may burst and catch fire. Failure to comply with these instructions will lead all warranties to be void and may cause battery explosion or fire which may result in property damage, personal injury and/or loss of life.
- FullyMax, its distributors or retailers assume no liability for failure to comply with these safety instructions and warnings.
- **By purchasing this Li-Po battery, the buyer assumes all risks associated with using the battery. If you do not agree with this clause, return the battery immediately before use. This document shall be applied to all the Li-Po MP, HP & XP series batteries manufactured and supplied by FullyMax.**

■ General Guidelines and Warnings

- 1) **Stop using or charging the battery immediately whenever a battery damages, gives off an odor, becomes discolored or deformed, starts to balloon or swell up, leaks, its temperature reaches over 160°F (71°C) or anything else abnormal occurs. Disconnect the battery and observe it in a safe place.** This abnormal problem may cause the battery to leak, and the reaction with air may cause the chemical materials inside to ignite and even result in fire. Since delayed chemical reaction may occur—a battery can still ignite even after 10 minutes, you should keep observing the battery for at least 15 minutes as a safety precaution. Battery observation should be taken in a safe area outside of any building or vehicle and away from any combustible material
- 2) **Do charge Li-Po battery only with qualified charger specifically designed for Li-Po battery. Do not use a Ni-MH or Ni-Cd charger.** Failure to do so may cause a fire which may result in personal injury and property damage. Some Li-Po chargers in the market may have technical deficiencies, which may cause to charge the Li-Po batteries incorrectly or at an improper rate. It is your responsibility solely to assure that the charger you purchased works properly.
- 3) Always charge batteries through balancer or use the charger with balance function. Overcharge may occur to the unbalance cell in the pack if you use the series charger, that may lead to shorten the battery life, and may even cause a fire which may result in personal injury and property damage.
- 4) **Never charge batteries unattended.** During the whole charging Li-Po batteries process, you should always remain in constant observation to monitor the charging process and react to any problems occurring to assure that batteries are being charged properly all the time.
- 5) **Do not discharge the batteries with the current exceeding the max. continuous discharge current specified for them,** otherwise, it will cause the batteries overheat and result in battery deterioration, burst, balloon or may even cause fire or explosion.
- 6) Never store or charge battery pack inside your car or in extreme temperature, since extreme temperature might ignite the battery and cause fire.
- 7) Store the battery at a place where infants/kids can not reach. Make sure children not to take the battery from the charger or equipment.

■ Handling and Caring for Battery

- 1) **Never disassemble, modify, puncture, mechanical shock, crash and/or short the battery, it may cause leakage, smoke emission, ignition, explosion and even fire, which may result in personal injury and property damage.**
- 2) **Short circuit may cause fire and injury!** If you need to cut the terminal wires of the battery, it is necessary to cut each wire separately, ensuring the wires not to touch each other, otherwise, a short may occur and potentially cause a fire. To solder a connector, remove insulating tape of Red wire and solder to positive terminal of a connector, then remove insulating tape of Black wire and solder to the negative terminal of the connector. Be careful not to short the wire lead. If you accidentally cause the battery to short, place it in a safe open space and observe the battery for at least 15 minutes. **A battery may swell or even possibly catch fire after a short time.** Additionally, if a short occurs and contact is made with metal (such as rings on your hand), severe injuries may occur due to the conductivity of strong electric current.
- 3) Dispose the used or damaged Li-Po batteries at your local Hazardous Waste Facility or return them to the place of purchase.

■ Charging Process and Precautions

- 1) Never charge batteries unattended. Use specific qualified Lithium Polymer charger only.
Do not let the temperature exceed the range from 32 to 113°F (0°C to 45°C).
- 2) Always charge the batteries in an isolated safe area away from any flammable/combustible materials. Never charge a Li-Po battery on a wooden workbench, inside an automobile, or on any flammable surface. FullyMax recommends charging Li-Po batteries on a concrete surface where there are no flammable objects within 10 feet (3 meters) of the charging area.
- 3) Always remove your Li-Po battery from your equipment using Li-Po battery and cool down the battery to ambient temperature before charging.
- 4) **Check the voltage of the pack or cells before charging.** Do not attempt to charge any pack if the open voltage is lower than the Lowest Open Voltage (Please refer to Chart 1). FullyMax recommends checking the voltage of each cell before charging with the balance connector. If the open voltage of any cell is less than 3.0V/cell, stop charging the battery, remove the battery from service and dispose it properly.
- 5) **Reverse Charging is prohibited!** You must check the polarity before connecting the battery to the charger. Do not reverse the positive (+) and negative (-) terminals when charging. Otherwise, the battery pack will be reverse-charged, abnormal chemical reactions will occur, and the excessively high current will cause damage, overheating, smoke emission, bursting and/or fire.
- 6) When selecting the cell count or voltage for charging purposes, **select the cell count and voltage as it appears on the battery label.** As a safety precaution, please confirm that the information printed on the battery or label is correct. (Please refer to Chart 1). Selecting a wrong cell count or charging voltage may cause fire.
- 7) **Never charge the battery with the current exceeding 1C** (one times the capacity of the battery). A higher setting may cause fire. (Please refer to Chart 2)
- 8) If charging operation fails to complete even when a specified recharging time has elapsed, immediately stop further recharging.

■ Usage and Discharge Warnings

- 1) Please check cell voltage after the first charge to make sure the voltage not to exceed the range specified in Chart 1. FullyMax recommends to check the voltage of each cell with the balance connector to make sure the voltage of each cell keeps within 4.15-4.22V.
- 2) The range of discharge temperature is between 32 to 113°F (0 to 45°C). For optimum performance of our R/C batteries, 68 to 86°F (20 to 30°C) is recommended.
- 3) During discharging and handling the batteries, keep the temperature not to exceed 160°F (71°C), otherwise, the battery may be damaged and may even result in fire.
- 4) For the first discharge, use low discharging current and keep the discharging time into every 6-minute session with 15-minute breaks.
- 5) **Do not discharge the battery with the current over the designed maximum continuous discharging current specified in Chart 2. A higher discharging current may cause overheat which will lead to balloon and swell up or even result in fire.** For example, a 1000mAh battery with a designed max. 25C discharge current must not have a maximum discharge rate or load of more than 25 Amps. The maximum discharge rate or load must never be exceeded. For longer cycle life, a continuous discharging current of 70%-80% of the designed maximum discharging current is acceptable and recommended.

6) **Never discharge Li-Po battery below the Lowest Discharge Voltage (Please refer to Chart 1), as it may cause irreversible damage which will deteriorate the battery performance and cycle life.** Caution must be taken so that your Li-Po batteries do not discharge lower than the Lowest Discharge Voltage when using Electronic Speed Controls (ESCs that use a set battery elimination circuit (BEC) cut-off value created for use with Ni-Cd or Mi-MH batteries). When using ESCs with BEC designed for use with Ni-Cd or Ni-MH batteries where the cut-off voltage would be lower than the Lowest Discharge Voltage, you should stop flying and land immediately after you notice any drop of power.

Chart 1

Battery packing	1SxP (single cell)	2SxP (2 cells connected in series)	3SxP (3 cells connected in series)	4SxP (4 cells connected in series)	5SxP (5 cells connected in series)	6SxP (6 cells connected in series)
Nominal Voltage (V)	3.7	7.4	11.1	14.8	18.5	22.2
Lowest Open Voltage (V)	3.0	6.2	9.3	12.8	16.5	19.8
Max. Charging Voltage (V)	4.2	8.4	12.6	16.8	21.0	25.2
Voltage after Charging(V)	4.15-4.22	8.32-8.44	12.48-12.66	16.64-16.88	20.80-21.10	24.90-25.50
Lowest Discharging Voltage(V)	2.75	6.0	9.0	12.0	15.0	18.0

Chart 2

Battery Series	XP series	XP series	XP series	XP series	XP series	XP series	XP series	XP series	XP series	XP series	XP series
Capacity (mAh)	450	600	850	1000	1300	1800	2200	3300	3700	4500	5300
Max. Charging Current (mA)	450	600	850	1000	1300	1800	2200	3300	3700	4500	5300
Max. Conti Discharging Current	25C(11.3A)	25C(15.0A)	25C(21.3A)	25C(25.0A)	25C(32.5A)	25C(45.0A)	25C(55.0A)	22C(72.6A)	22C(81.4A)	22C(99.0A)	22C(116.6A)
Burst Current	22.5A	30.0A	42.5A	50.0A	65.0A	90.0A	110A	132A	148A	180A	212A

Battery Series	HP series	HP series	HP series	HP series	HP series	HP series	HP series	HP series	HP series	HP series	MP series
Capacity (mAh)	250	350	450	600	850	1000	1300	1500	1800	2200	800
Max. Charging Current (mA)	250	350	450	600	850	1000	1300	1500	1800	2200	800
Max. Conti Discharging Current	15C(3.75A)	15C(5.25A)	15C(6.75A)	15C(9.0A)	15C(12.8A)	15C(15.0A)	15C(19.5A)	15C(22.5A)	15C(27.0A)	15C(33.0A)	10C(8.0A)
Burst Current	7.5A	10.5A	13.5A	18.0A	25.5A	30.0A	39.0A	45A	54A	66A	16A

■ In the case of Li-Po Battery powered model crash

Whenever a Li-Po battery pack is subjected to a crash, immediately do the following:

- 1) Remove the Li-Po battery pack from the model in which it is used.
- 2) Place the Li-Po battery pack in a safe open area away from any flammable/combustible materials and monitor the pack for at least 30minutes. Watch for swelling of the pack and/or unnatural heat build-up. These are signs of internal damage.
- 3) Damage of your Li-Po battery pack may not be readily apparent upon visual inspection. Check the battery to find if any shorts and other damages occur carefully. You should inspect them thoroughly for damage before attempting to use them again.

■ Storage & Transportation

- 1) Never leave your Li-Po batteries installed in your model when not in use. Do store your Li-Po batteries in an airtight and flame resistant container when not in use.
- 2) Do store battery at a place with low humidity and free from corrosive gas & combustible materials within the temperature range from 14°F to 104°F (-10°C to 40°C). Storage at temperature from 41°F to 77°F (5°C to 25°C) is recommended for best results.
- 3) Do not expose Li-Po batteries to direct sunlight for extended period of time or leave it at any heat place such as in a car in hot weather.
- 4) When batteries are transported or temporarily stored in a vehicle, temperature should be higher than 14°F (-10°C) but not over 140°F(60°C).
- 5) Storing battery at temperatures higher than 170 °F(76°C) for more than 2 hours may cause damage to battery and may even cause fire.
- 6) A higher cell voltage during storage will accelerate the self-discharge of the battery which may lead to over-discharge and deteriorate the battery performance, it is recommended to keep the cell at a lower voltage (about 3.8V/cell) throughout the period of storage. If the battery is to be stored for longer than one year, the user should charge the battery at least once a year to about 3.8V/cell so as to prevent over-discharge.

■ Battery Life

Batteries that lose 20% of their capacity must be removed from service. Discharge the battery to 3.0V/cell and make sure the output wires are insulated, and then wrap the battery in a bag for proper disposal.

■ FULLYMAX Limited Product Warranty

FullyMax warrants this product against original defects in material or workmanship for a period of 90 days from the purchasing date. Misuse, abuse, incorrect charging and other inappropriate use of this product are not covered under warranty. Warranty does not cover collateral damage. During the warranty period, if this Product is determined to be defective, such as you find rust, a bad odor, overheating, battery balloon or swell up, discolor, deformation, and/or other irregularities when using the battery for the first time, return it to your supplier or vendor. FullyMax and/or its distributors will repair or replace the Product (as an option), with no charge. Proof of purchase in the form of a bill of sale or receipted invoice evidencing that the Product is within the warranty period must be presented to obtain warranty service.

REPAIR OR REPLACEMENT PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY FOR THE CONSUMER. FULLYMAX SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

FullyMax Battery Company Ltd
 2/F., Block E-2 Eastern Industry Zone,
 OCT, Nanshan District, Shenzhen, 518028 P.R. China
 Tel: +86-755-26925861 Fax: +86-755-26925860
 website: www.fullymax.com

