

BATERÍAS DE LITIO RECARGABLES

RECHARGEABLE LITHIUM BATTERIES



LiPo
LiIon
LiFePO4

Lithium Titanate
Litio Titanato

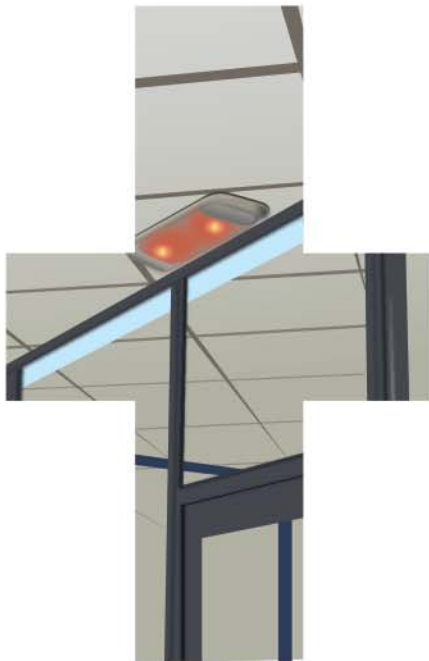
Lithium Polymer
Litio Polímero

Lithium Ion
Litio

Lithium Ferrophosphate
Litio Ferrofosfato



Moto eléctrica
Electric motorbike



Luz de emergencia
Emergency light



Linterna
Flashlight



Helicóptero de radiocontrol
Radio Controlled Helicopter

1.- Descripción

La evolución y proliferación de dispositivos electrónicos alimentados por baterías ha impulsado en los últimos años el desarrollo de nuevas tecnologías que han permitido mejorar las prestaciones de los aparatos electrónicos. Las baterías con base de litio son la última generación de baterías de uso popular. Forman parte de nuestra vida al estar presentes en los smartphone, tablet, ordenador portátil, etc. La tecnología de baterías basadas en Litio es ya una tecnología madura después de varias décadas de desarrollo. Sigue siendo una tecnología que se diferencia de las demás por las múltiples ventajas sin apenas factores negativos.

Las principales ventajas son su alta densidad de energía, su rápida carga y su ligereza a la vez que el inconveniente principal es su inestabilidad química frente a sobre-cargas o sobre-descargas que obligan a utilizar sistemas electrónicos que protejan a la batería.

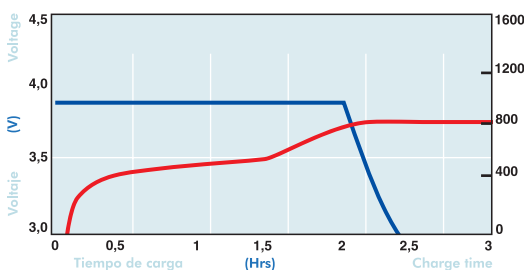
Hay varias familias de baterías de litio en función de los materiales utilizados en su construcción, principalmente en el cátodo: Cobalto, Manganeso, Ferrofosfato, Titanato, etc.

2.- Carga

Las baterías de Litio requieren una técnica de carga muy específica debido a sus características químicas y eléctricas. En otras tecnologías, como las basadas en Níquel o Plomo, la batería alcanza la carga plena antes de que la sobre-carga pueda producir daños, normalmente debidos al calor liberado por la energía no almacenada. Sin embargo, las baterías de Litio se deterioran químicamente cuando sobrepasan un determinado voltaje, apesar de no estar totalmente cargadas.

Por este motivo, se debe utilizar una carga combinada de corriente constante/voltaje constante (CC/CV) de forma que la batería se carga a intensidad constante hasta que alcanza el voltaje máximo. En ese punto, el voltaje debe mantenerse constante mientras la intensidad va disminuyendo hasta un nivel señalado en el que se considera cargada la batería.

Las baterías de Litio admiten una intensidad de carga de relación elevada con respecto a la Capacidad en comparación a otras tecnologías y tienen un rendimiento muy alto en la carga.



Carga de batería Li-Po
Li-Po battery charge

1.- Description

The development and proliferation of battery-powered electronic devices has promoted in recent years the development of new technologies that have improved the performance of electronic devices. The lithium-based batteries are the latest generation of batteries in popular use. They are part of our life as they are present in the smartphones, tablets, laptops, etc. Technology based on lithium batteries is already a mature technology after decades of development. It remains as a technology that differs from the others by its multiple advantages with few negative factors.

The main advantages are its high energy density, rapid charging and light weight while the main disadvantage is its chemical instability against overloads or overdischarges that require the use of electronic systems to protect the battery.

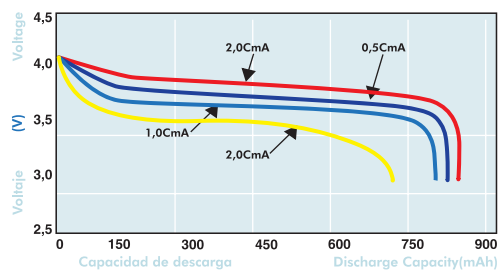
There are several families of lithium batteries depending on the materials used in its construction, mainly in the cathode: Cobalt, Manganese, Iron-Phosphate, Titanite, etc.

2.- Charge

Lithium batteries require a very specific charging technique due to its chemical and electrical properties. In other technologies, like the ones based on Nickel or Lead Acid, the battery reaches its maximum charge before the over-charge can produce any damage, normally caused by the heat liberated by the energy that is not stored. However, Lithium batteries deteriorate chemically when they exceed their maximum voltage, even though they are not fully charged.

For this reason, it should be used a combined charging method constant current / constant voltage (CC / CV) so the battery is charged at constant current until it reaches the maximum voltage. At that point, the voltage must be kept constant while the current decreases until a specific level at which the battery is considered charged.

Lithium batteries support a high charging current with respect to the capacity compared to other technologies and have a very high charging efficiency.



Descarga de batería Li-Ion
Li-Ion battery discharge

3.- Descarga

Las baterías de Litio no deben descargarse por debajo de un determinado voltaje. Si esto sucede, la batería se deteriora disminuyendo la capacidad, el número de ciclos o desgastándose el electrolito. La auto-descarga de las baterías de Litio es muy inferior a la de otras tecnologías.

4.- Circuitos de protección

La vulnerabilidad de las baterías de Litio frente a sobre-voltaje, sobre-descarga y sobre-intensidad entre otros, hace muy recomendable (casi imprescindible) el uso de circuitos electrónicos que controlen los valores de voltaje e intensidad en carga y descarga para evitar daños en la batería. El término PCM (Protection Circuit Monitor) sirve para designar un pequeño circuito electrónico que controla los parámetros peligrosos para la batería. El PCM tiene el control y capacidad de desconectar la batería para protegerla tanto en la carga como en la descarga. Son circuitos muy simples y muy eficaces que conviven con las baterías de Litio en casi todas las situaciones.

5.- Asociación en baterías

La asociación de baterías en "packs" es frecuente ante la necesidad de conseguir una batería con el voltaje y la capacidad necesarios para cubrir las necesidades de los dispositivos electrónicos. En todas las tecnologías, si bien la asociación en serie es relativamente sencilla y segura, la unión en paralelo es fuente de problemas de funcionamiento del pack. Las baterías de Litio, sin embargo, pueden ser conectadas en paralelo en aplicaciones en las que se necesita gran capacidad.

Es fundamental usar PCMs adecuados para asociaciones en serie que monitoricen los niveles de cada batería de forma que si una de las baterías en serie alcanza el nivel máximo o mínimo el PCM debe aislar la batería.

La asociación de baterías de Litio en packs en serie, provoca la descompensación de las baterías individuales. Este efecto se debe a que las baterías no son exactamente iguales a pesar de que deben asociarse baterías los más parecidas posible. Al no ser iguales, no se cargan y descargan a la vez y siempre habrá una batería del pack que alcance el nivel máximo de carga o de descarga antes que las demás y que provocará la desconexión del pack por el PCM.

El desequilibrio de las baterías es un problema grave. El pack de baterías simulará tener la capacidad de la batería más descargada del conjunto, dando la sensación de que el pack tiene menos capacidad de la que realmente tiene.

6.- Balanceo de las células de una asociación de baterías

El balanceo es una técnica que se aplica a packs de baterías para corregir los desequilibrios que aparecen entre las diferentes células de un pack. Esta función se puede realizar de muchas maneras. Los PCMs FULLWAT de 2 o más baterías en serie incorporan un balanceador por batería que descarga una parte de la intensidad de carga cuando la batería está a punto de alcanzar el voltaje máximo. De esta manera se ralentiza la última parte de la carga para la batería que más cargada está, mientras que las demás baterías del pack se siguen cargando más rápido. De esta manera, en cada carga, se minimiza el desequilibrio entre las baterías.

3.- Discharge

Lithium batteries should not be discharged below a certain voltage. If this happens, the battery deteriorates lowering the capacity, the number of cycles or deteriorating the electrolyte. The self-discharge of lithium batteries is much lower than other technologies.

4.- Protection circuits

The vulnerability of lithium batteries against overvoltage, overdischarge and overintensity among others, makes highly recommended (almost essential) use electronic circuitry to control the voltage and current values while charging and discharging to avoid damage on battery. The term PCM (Protection Circuit Monitor) is used to describe a small electronic circuit that controls hazardous parameters of the battery. The PCM has the control and ability to disconnect the battery to protect both charge and discharge. They are very simple and very effective circuits that coexist with lithium batteries in almost all situations.

5.- Batteries assembly

The association of batteries in packs is often necessary to obtain a battery with enough voltage and capacity to reach the needs of the electronic devices. In all technologies, although the association in series is relatively simple and safe, the association in parallel is source of malfunctions. Lithium batteries, however, can be connected in parallel in applications where high capacity is needed.

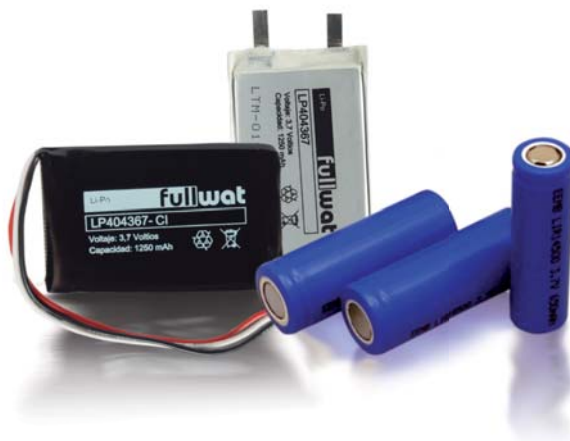
It is essential to use PCMs suitable for serial associations that monitor the levels of each battery, as it must isolate the pack in case one of the batteries in series reaches the maximum or minimum levels.

The association of lithium batteries packs in series causes decompensation of the single batteries. This effect appears as the batteries are not exactly equal, even though the batteries in a battery pack must be associated as equal as possible. As they are not equals, they are not charged and discharged at the same time and there will be always a battery in the pack that reaches full charge or discharge before the others, and it will cause the disconnection of the pack by the PCM.

The imbalance of the batteries is a serious problem as the battery pack will be simulating the capacity of the less charged battery of the pack, looking like the pack has less capacity than it could really have.

4.- Cells balance of a battery pack

The balancing is a technique that is applied to battery packs to correct the imbalances that occur between the different cells in a pack. This function can be performed in many ways. FULLWAT PCMs for 2 or more batteries in series incorporates a balancer for each battery. This balancer discharges a portion of the charging current when the battery is about to reach its maximum voltage. With this method the charging process is slows down in the top battery of the pack while the other batteries in the pack are still charging faster. Thus, in each load, the imbalance between the batteries is minimized.



Baterías de Litio recargables

Rechargeable Lithium batteries

Baterías cilíndricas alta capacidad

Cylindrical high capacity batteries

REFERENCIA	TAMAÑO	CAPACIDAD NOMINAL	CORRIENTE MAX. DE DESCARGA	VOLTAGE NOMINAL	DIAMETRO	ALTO	PESO
PART NUMBER	SIZE	RATED CAPACITY	MAX. DISCHARGE CURRENT	RATED VOLTAGE	DIAMETER	HEIGHT	WEIGHT
LIR14500-8	AA	800 mAh	1600 mA	3,7 V	14,2 mm	49,0 mm	20,5 gr
LIR18650-20	1865	2000 mAh	2000 mA	3,7 V	18,5 mm	65,0 mm	44,0 gr
LIR18650-26	1865	2600 mAh	5000 mA	3,7 V	18,5 mm	65,0 mm	48,0 gr
LIR18650-26-CIT	1865	2600 mAh	3000 mA	3,7 V	18,5 mm	70,0 mm	48,0 gr
LIR18650-34	1865	3400 mAh	4875 mA	3,7 V	18,5 mm	65,0 mm	49,0 gr
LIR18650-34-CIT	1865	3400 mAh	3000 mA	3,7 V	18,5 mm	70,0 mm	49,0 gr
LIR22650-30	3/2SC	3000 mAh	3000 mA	3,7 V	22,3 mm	65,5 mm	60,0 gr
LIR26650-5	4/3C	5000 mAh	5000 mA	3,7 V	26,3 mm	65,5 mm	95,0 gr

Baterías cilíndricas alta descarga

Cylindrical high discharge batteries

REFERENCIA	TAMAÑO	CAPACIDAD NOMINAL	CORRIENTE MAX. DE DESCARGA	VOLTAGE NOMINAL	DIAMETRO	ALTO	PESO
PART NUMBER	SIZE	RATED CAPACITY	MAX. DISCHARGE CURRENT	RATED VOLTAGE	DIAMETER	HEIGHT	WEIGHT
LIR18650R-20	1865	2.000 mAh	20.000 mA	3,7V	18,6 mm	65,5 mm	44,0 gr



Litio Titanato

Lithium Titanate

REFERENCIA	TAMAÑO	CAPACIDAD NOMINAL	CORRIENTE MAX. DE DESCARGA	VOLTAGE NOMINAL	DIAMETRO	ALTO	PESO
PART NUMBER	SIZE	RATED CAPACITY	MAX. DISCHARGE CURRENT	RATED VOLTAGE	DIAMETER	HEIGHT	WEIGHT
LTI18650-12HU	1865	1200 mAh	12000 mA	2,4V	18,7 mm	65,7 mm	39,5 gr



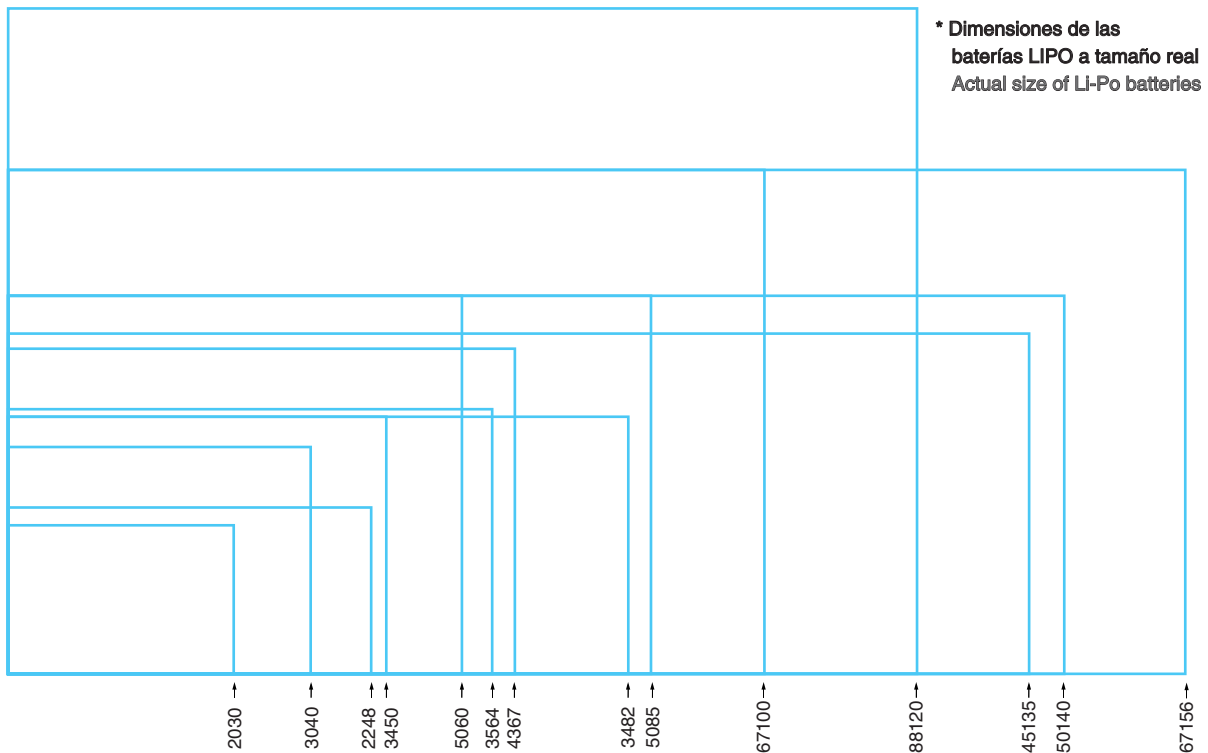
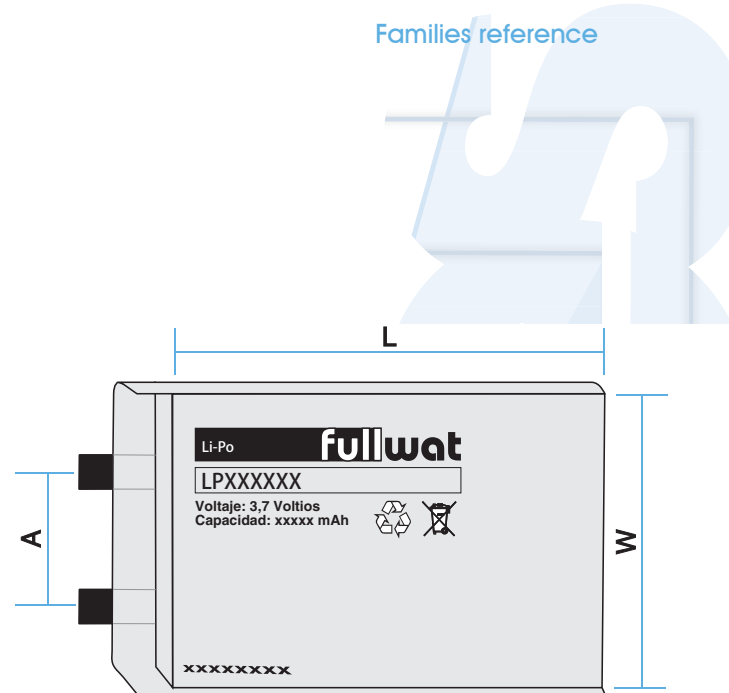
Baterías Soft bag alta capacidad

Soft bag high capacity batteries

Tabla de familias

Families reference

FAMILIA	REFERENCIA	W	L	A
FAMILY	PART NUMBER	W	L	A
2030	LPXX2030	20,0 ± 1 mm	30,0 ± 0,5 mm	10,0 mm
2248	LPXX2248	22,0 ± 1 mm	48,0 ± 0,5 mm	10,0 mm
3040	LPXX3040	30,0 ± 1 mm	40,0 ± 0,5 mm	14,0 mm
3450	LPXX3450	34,0 ± 1 mm	50,0 ± 0,5 mm	17,0 mm
3482	LPXX3482	34,0 ± 1 mm	82,0 ± 0,5 mm	17,0 mm
3564	LPXX3564	35,0 ± 1 mm	64,0 ± 0,5 mm	17,0 mm
4367	LPXX4367	43,0 ± 1 mm	67,0 ± 0,5 mm	24,0 mm
45135	LPXX45135	45,0 ± 1 mm	135,0 ± 0,5 mm	24,0 mm
5060	LPXX5060	50,0 ± 1 mm	60,0 ± 0,5 mm	24,0 mm
5085	LPXX5085	50,0 ± 1 mm	85,0 ± 0,5 mm	24,0 mm
50140	LPXX50140	50,0 ± 1 mm	140,0 ± 0,5 mm	24,0 mm
67100	LPXX67100	67,0 ± 1 mm	100,0 ± 0,5 mm	24,0 mm
67156	LPXX64156	67,0 ± 1 mm	156,0 ± 0,5 mm	32,0 mm
88120	LPXX88120	88,0 ± 1 mm	120,0 ± 0,5 mm	32,0 mm



REFERENCIA	VOLTAJE	GOSOR	ANCHO	LARGO	CAPACIDAD	PESO	
PART NUMBER	VOLTAGE	THICKNESS	WIDTH	LENGTH	CAPACITY	WEIGHT	
2030	LP402030	3,7 V	4,0 ± 0,5 mm	20,0 ± 1,0 mm	30,0 ± 1,0 mm	200,0 mAh	5,0 g
	LP602030	3,7 V	6,0 ± 0,5 mm	20,0 ± 1,0 mm	30,0 ± 1,0 mm	310,0 mAh	7,0 g
	LP802030	3,7 V	8,0 ± 0,5 mm	20,0 ± 1,0 mm	30,0 ± 1,0 mm	410,0 mAh	9,0 g
	LP972030	3,7 V	9,7 ± 0,5 mm	20,0 ± 1,0 mm	30,0 ± 1,0 mm	490,0 mAh	11,0 g
2248	LP402248	3,7 V	4,0 ± 0,5 mm	22,0 ± 1,0 mm	48,0 ± 1,0 mm	360,0 mAh	9,0 g
	LP602248	3,7 V	6,0 ± 0,5 mm	22,0 ± 1,0 mm	48,0 ± 1,0 mm	600,0 mAh	14,0 g
	LP802248	3,7 V	8,0 ± 0,5 mm	22,0 ± 1,0 mm	48,0 ± 1,0 mm	790,0 mAh	17,0 g
	LP972248	3,7 V	9,7 ± 0,5 mm	22,0 ± 1,0 mm	48,0 ± 1,0 mm	910,0 mAh	21,0 g
3040	LP403040	3,7 V	4,0 ± 0,5 mm	30,0 ± 1,0 mm	40,0 ± 1,0 mm	480,0 mAh	11,0 g
	LP603040	3,7 V	6,0 ± 0,5 mm	30,0 ± 1,0 mm	40,0 ± 1,0 mm	740,0 mAh	14,0 g
	LP803040	3,7 V	8,0 ± 0,5 mm	30,0 ± 1,0 mm	40,0 ± 1,0 mm	950,0 mAh	20,0 g
	LP973040	3,7 V	9,7 ± 0,5 mm	30,0 ± 1,0 mm	40,0 ± 1,0 mm	1150,0 mAh	24,0 g
3450	LP403450	3,7 V	4,0 ± 0,5 mm	34,0 ± 1,0 mm	50,0 ± 1,0 mm	650,0 mAh	15,0 g
	LP603450	3,7 V	6,0 ± 0,5 mm	34,0 ± 1,0 mm	50,0 ± 1,0 mm	1050,0 mAh	20,0 g
	LP803450	3,7 V	8,0 ± 0,5 mm	34,0 ± 1,0 mm	50,0 ± 1,0 mm	1400,0 mAh	26,0 g
	LP973450	3,7 V	9,7 ± 0,5 mm	34,0 ± 1,0 mm	50,0 ± 1,0 mm	1800,0 mAh	34,0 g
3482	LP403482	3,7 V	4,0 ± 0,5 mm	34,0 ± 1,0 mm	82,0 ± 1,0 mm	1200,0 mAh	24,0 g
	LP603482	3,7 V	6,0 ± 0,5 mm	34,0 ± 1,0 mm	82,0 ± 1,0 mm	1800,0 mAh	35,0 g
	LP803482	3,7 V	8,0 ± 0,5 mm	34,0 ± 1,0 mm	82,0 ± 1,0 mm	2400,0 mAh	44,0 g
	LP973482	3,7 V	9,7 ± 0,5 mm	34,0 ± 1,0 mm	82,0 ± 1,0 mm	3000,0 mAh	53,0 g
3564	LP403564	3,7 V	4,0 ± 0,5 mm	35,0 ± 1,0 mm	64,0 ± 1,0 mm	950,0 mAh	17,0 g
	LP603564	3,7 V	6,0 ± 0,5 mm	35,0 ± 1,0 mm	64,0 ± 1,0 mm	1130,0 mAh	27,0 g
	LP803564	3,7 V	8,0 ± 0,5 mm	35,0 ± 1,0 mm	64,0 ± 1,0 mm	1800,0 mAh	35,0 g
	LP973564	3,7 V	9,7 ± 0,5 mm	35,0 ± 1,0 mm	64,0 ± 1,0 mm	2200,0 mAh	48,0 g
4060	LP404060	3,7 V	4,0 ± 0,5 mm	40,0 ± 1,0 mm	60,0 ± 1,0 mm	1050,0 mAh	20,0 g
	LP604060	3,7 V	6,0 ± 0,5 mm	40,0 ± 1,0 mm	60,0 ± 1,0 mm	1600,0 mAh	34,0 g
	LP804060	3,7 V	8,0 ± 0,5 mm	40,0 ± 1,0 mm	60,0 ± 1,0 mm	2350,0 mAh	44,0 g
	LP974060	3,7 V	9,7 ± 0,5 mm	40,0 ± 1,0 mm	60,0 ± 1,0 mm	2550,0 mAh	55,0 g
4367	LP404367	3,7 V	4,0 ± 0,5 mm	43,0 ± 1,0 mm	67,0 ± 1,0 mm	1250,0 mAh	26,0 g
	LP604367	3,7 V	6,0 ± 0,5 mm	43,0 ± 1,0 mm	67,0 ± 1,0 mm	1900,0 mAh	38,0 g
	LP804367	3,7 V	8,0 ± 0,5 mm	43,0 ± 1,0 mm	67,0 ± 1,0 mm	2400,0 mAh	46,0 g
	LP974367	3,7 V	9,7 ± 0,5 mm	43,0 ± 1,0 mm	67,0 ± 1,0 mm	3100,0 mAh	60,0 g
45135	LP4045135	3,7 V	4,0 ± 0,5 mm	45,0 ± 1,0 mm	135,0 ± 1,0 mm	2600,0 mAh	54,0 g
	LP6045135	3,7 V	6,0 ± 0,5 mm	45,0 ± 1,0 mm	135,0 ± 1,0 mm	4100,0 mAh	74,0 g
	LP8045135	3,7 V	8,0 ± 0,5 mm	45,0 ± 1,0 mm	135,0 ± 1,0 mm	5500,0 mAh	99,0 g
	LP9745135	3,7 V	9,7 ± 0,5 mm	45,0 ± 1,0 mm	135,0 ± 1,0 mm	6400,0 mAh	119,0 g
5060	LP405060	3,7 V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	60,0 ± 1,0 mm	1250,0 mAh	27,0 g
	LP605060	3,7 V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	60,0 ± 1,0 mm	2000,0 mAh	36,0 g
	LP805060	3,7 V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	60,0 ± 1,0 mm	2600,0 mAh	53,0 g
	LP975060	3,7 V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	60,0 ± 1,0 mm	3200,0 mAh	62,0 g



Baterías Soft bag alta capacidad

Soft bag high capacity batteries



REFERENCIA	VOLTAJE	GOSOR	ANCHO	LARGO	CAPACIDAD	PESO	
PART NUMBER	VOLTAGE	THICKNESS	WIDTH	LENGTH	CAPACITY	WEIGHT	
5085	LP405085	3,7 V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	85,0 ± 1,0 mm	1800,0 mAh	40,0 g
	LP605085	3,7 V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	85,0 ± 1,0 mm	2800,0 mAh	57,0 g
	LP805085	3,7 V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	85,0 ± 1,0 mm	4000,0 mAh	76,0 g
	LP975085	3,7 V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	85,0 ± 1,0 mm	4500,0 mAh	92,0 g
50140	LP4050140	3,7 V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	3050,0 mAh	56,0 g
	LP6050140	3,7 V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	4800,0 mAh	92,0 g
	LP8050140	3,7 V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	6400,0 mAh	121,0 g
	LP9750140	3,7 V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	7800,0 mAh	137,0 g
67100	LP4067100	3,7 V	4,0 ± 0,5 mm	67,0 ± 1,0 mm	100,0 ± 0,5 mm	2800,0 mAh	56,0 g
	LP6067100	3,7 V	6,0 ± 0,5 mm	67,0 ± 1,0 mm	100,0 ± 0,5 mm	4600,0 mAh	88,0 g
	LP8067100	3,7 V	8,0 ± 0,5 mm	67,0 ± 1,0 mm	100,0 ± 0,5 mm	6000,0 mAh	120,0 g
	LP9767100	3,7 V	9,7 ± 0,5 mm	67,0 ± 1,0 mm	100,0 ± 0,5 mm	7300,0 mAh	147,0 g
67156	LP4067156	3,7 V	4,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	4700,0 mAh	97,0 g
	LP6067156	3,7 V	6,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	7200,0 mAh	131,0 g
	LP8067156	3,7 V	8,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	9600,0 mAh	175,0 g
	LP9767156	3,7 V	9,7 ± 0,5 mm	67,0 ± 1 mm	156,0 ± 0,5 mm	11600,0 mAh	236,0 g
88120	LP4088120	3,7 V	4,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	4700,0 mAh	93,0 g
	LP6088120	3,7 V	6,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	7200,0 mAh	135,0 g
	LP8088120	3,7 V	8,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	9600,0 mAh	192,0 g
	LP9788120	3,7 V	9,7 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	13000,0 mAh	208,0 g



LP402030



LP404367



LP4067100

Baterías Soft bag alta capacidad con PCM

Soft bag high capacity batteries with PCM

REFERENCIA	VOLTAJE	GOSOR	ANCHO	LARGO	CAPACIDAD	PESO	CONECTOR	
PART NUMBER	VOLTAGE	THICKNESS	WIDTH	LENGTH	CAPACITY	WEIGHT	CONNECTOR	
2030	LP402030-CI	3,7 V	4,0 ± 0,5 mm	20,0 ± 1,0 mm	35,0 ± 1,0 mm	200,0 mAh	5,0 g	PAP-03V-S
	LP602030-CI	3,7 V	6,0 ± 0,5 mm	20,0 ± 1,0 mm	35,0 ± 1,0 mm	310,0 mAh	7,0 g	PAP-03V-S
	LP802030-CI	3,7 V	8,0 ± 0,5 mm	20,0 ± 1,0 mm	35,0 ± 1,0 mm	410,0 mAh	9,0 g	PAP-03V-S
	LP972030-CI	3,7 V	9,7 ± 0,5 mm	20,0 ± 1,0 mm	35,0 ± 1,0 mm	490,0 mAh	11,0 g	PAP-03V-S
2248	LP402248-CI	3,7 V	4,0 ± 0,5 mm	22,0 ± 1,0 mm	35,0 ± 1,0 mm	360,0 mAh	9,0 g	PAP-03V-S
	LP602248-CI	3,7 V	6,0 ± 0,5 mm	22,0 ± 1,0 mm	35,0 ± 1,0 mm	600,0 mAh	14,0 g	PAP-03V-S
	LP802248-CI	3,7 V	8,0 ± 0,5 mm	22,0 ± 1,0 mm	35,0 ± 1,0 mm	790,0 mAh	17,0 g	PAP-03V-S
	LP972248-CI	3,7 V	9,7 ± 0,5 mm	22,0 ± 1,0 mm	35,0 ± 1,0 mm	910,0 mAh	21,0 g	PAP-03V-S
3040	LP403040-CI	3,7 V	4,0 ± 0,5 mm	30,0 ± 1,0 mm	45,0 ± 1,0 mm	480,0 mAh	11,0 g	PAP-03V-S
	LP603040-CI	3,7 V	6,0 ± 0,5 mm	30,0 ± 1,0 mm	45,0 ± 1,0 mm	740,0 mAh	14,0 g	PAP-03V-S
	LP803040-CI	3,7 V	8,0 ± 0,5 mm	30,0 ± 1,0 mm	45,0 ± 1,0 mm	950,0 mAh	20,0 g	PAP-03V-S
	LP973040-CI	3,7 V	9,7 ± 0,5 mm	30,0 ± 1,0 mm	45,0 ± 1,0 mm	1150,0 mAh	24,0 g	PAP-03V-S
3450	LP403450-CI	3,7 V	4,0 ± 0,5 mm	34,0 ± 1,0 mm	55,0 ± 1,0 mm	650,0 mAh	15,0 g	PAP-03V-S
	LP603450-CI	3,7 V	6,0 ± 0,5 mm	34,0 ± 1,0 mm	55,0 ± 1,0 mm	1050,0 mAh	20,0 g	PAP-03V-S
	LP803450-CI	3,7 V	8,0 ± 0,5 mm	34,0 ± 1,0 mm	55,0 ± 1,0 mm	1400,0 mAh	26,0 g	PAP-03V-S
	LP973450-CI	3,7 V	9,7 ± 0,5 mm	34,0 ± 1,0 mm	55,0 ± 1,0 mm	1800,0 mAh	34,0 g	PAP-03V-S
3482	LP403482-CI	3,7 V	4,0 ± 0,5 mm	34,0 ± 1,0 mm	87,0 ± 1,0 mm	1200,0 mAh	24,0 g	VHR-3N
	LP603482-CI	3,7 V	6,0 ± 0,5 mm	34,0 ± 1,0 mm	87,0 ± 1,0 mm	1800,0 mAh	35,0 g	VHR-3N
	LP803482-CI	3,7 V	8,0 ± 0,5 mm	34,0 ± 1,0 mm	87,0 ± 1,0 mm	2400,0 mAh	44,0 g	VHR-3N
	LP973482-CI	3,7 V	9,7 ± 0,5 mm	34,0 ± 1,0 mm	87,0 ± 1,0 mm	3000,0 mAh	53,0 g	VHR-3N
3564	LP403564-CI	3,7 V	4,0 ± 0,5 mm	35,0 ± 1,0 mm	69,0 ± 1,0 mm	950,0 mAh	17,0 g	PAP-03V-S
	LP603564-CI	3,7 V	6,0 ± 0,5 mm	35,0 ± 1,0 mm	69,0 ± 1,0 mm	1130,0 mAh	27,0 g	PAP-03V-S
	LP803564-CI	3,7 V	8,0 ± 0,5 mm	35,0 ± 1,0 mm	69,0 ± 1,0 mm	1800,0 mAh	35,0 g	PAP-03V-S
	LP973564-CI	3,7 V	9,7 ± 0,5 mm	35,0 ± 1,0 mm	69,0 ± 1,0 mm	2200,0 mAh	48,0 g	PAP-03V-S
4060	LP404060-CI	3,7 V	4,0 ± 0,5 mm	40,0 ± 1,0 mm	68,0 ± 1,0 mm	1050,0 mAh	20,0 g	PAP-03V-S
	LP604060-CI	3,7 V	6,0 ± 0,5 mm	40,0 ± 1,0 mm	68,0 ± 1,0 mm	1600,0 mAh	34,0 g	PAP-03V-S
	LP804060-CI	3,7 V	8,0 ± 0,5 mm	40,0 ± 1,0 mm	68,0 ± 1,0 mm	2350,0 mAh	44,0 g	PAP-03V-S
	LP974060-CI	3,7 V	9,7 ± 0,5 mm	40,0 ± 1,0 mm	68,0 ± 1,0 mm	2550,0 mAh	55,0 g	PAP-03V-S
4367	LP404367-CI	3,7 V	4,0 ± 0,5 mm	43,0 ± 1,0 mm	72,0 ± 1,0 mm	1250,0 mAh	26,0 g	VHR-3N
	LP604367-CI	3,7 V	6,0 ± 0,5 mm	43,0 ± 1,0 mm	72,0 ± 1,0 mm	1900,0 mAh	38,0 g	VHR-3N
	LP804367-CI	3,7 V	8,0 ± 0,5 mm	43,0 ± 1,0 mm	72,0 ± 1,0 mm	2400,0 mAh	46,0 g	VHR-3N
	LP974367-CI	3,7 V	9,7 ± 0,5 mm	43,0 ± 1,0 mm	72,0 ± 1,0 mm	3100,0 mAh	60,0 g	VHR-3N
45135	LP4088120-CI	3,7 V	4,0 ± 0,5 mm	45,0 ± 1,0 mm	125,0 ± 1,0 mm	2600,0 mAh	54,0 g	VHR-3N
	LP6088120-CI	3,7 V	6,0 ± 0,5 mm	4,05 ± 1,0 mm	125,0 ± 1,0 mm	4100,0 mAh	74,0 g	VHR-3N
	LP8088120-CI	3,7 V	8,0 ± 0,5 mm	45,0 ± 1,0 mm	125,0 ± 1,0 mm	5500,0 mAh	99,0 g	VHR-3N
	LP9788120-CI	3,7 V	9,7 ± 0,5 mm	45,0 ± 1,0 mm	125,0 ± 1,0 mm	6400,0 mAh	119,0 g	VHR-3N
5060	LP405060-CI	3,7V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	65,0 ± 1,0 mm	1250,0 mAh	27,0 g	VHR-3N
	LP605060-CI	3,7V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	65,0 ± 1,0 mm	2000,0 mAh	36,0 g	VHR-3N
	LP805060-CI	3,7V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	65,0 ± 1,0 mm	2600,0 mAh	53,0 g	VHR-3N
	LP975060-CI	3,7V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	65,0 ± 1,0 mm	3200,0 mAh	62,0 g	VHR-3N



LP402030-CI



LP403450-CI



LP404367-CI

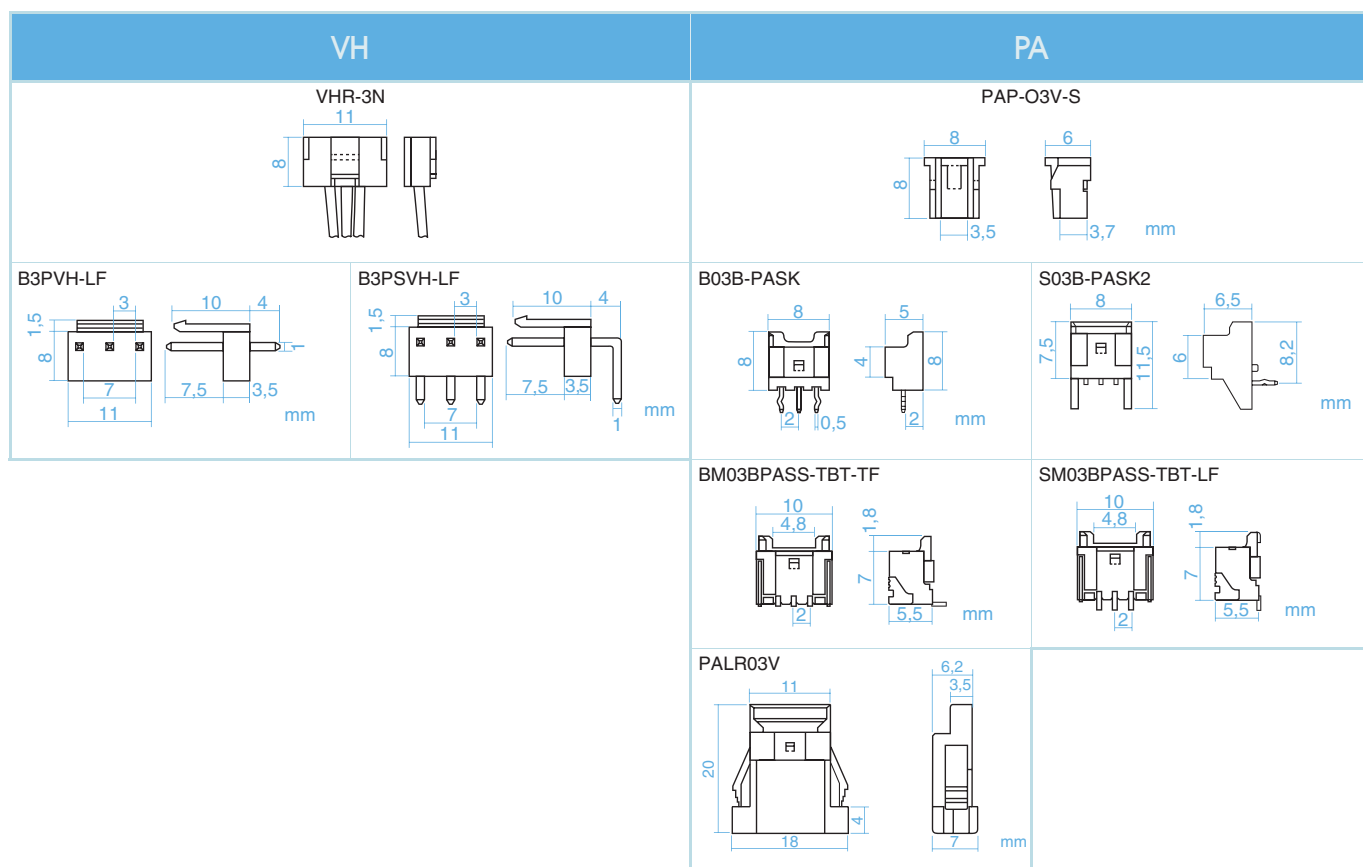
Baterías Soft bag alta capacidad con PCM

Soft bag high capacity batteries with PCM

	REFERENCIA	VOLTAJE	GOSOR	ANCHO	LARGO	CAPACIDAD	PESO	CONECTOR
	PART NUMBER	VOLTAGE	THICKNESS	WIDTH	LENGTH	CAPACITY	WEIGHT	CONNECTOR
5085	LP405085-CI	3,7V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	90,0 ± 1,0 mm	1800,0 mAh	40,0 g	VHR-3N
	LP605085-CI	3,7V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	90,0 ± 1,0 mm	2800,0 mAh	57,0 g	VHR-3N
	LP805085-CI	3,7V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	90,0 ± 1,0 mm	4000,0 mAh	76,0 g	VHR-3N
	LP975085-CI	3,7V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	90,0 ± 1,0 mm	5000,0 mAh	92,0 g	VHR-3N
50140	LP4050140-CI	3,7 V	4,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	3050 mAh	56,0 g	VHR-3N
	LP6050140-CI	3,7 V	6,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	4800 mAh	92,0 g	VHR-3N
	LP8050140-CI	3,7 V	8,0 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	6400 mAh	121,0 g	VHR-3N
	LP9750140-CI	3,7 V	9,7 ± 0,5 mm	50,0 ± 1,0 mm	140,0 ± 0,5 mm	7800 mAh	137,0 g	VHR-3N
67100	LP4067100-CI	3,7 V	4,0 ± 0,5 mm	67,0 ± 1,0 mm	105,0 ± 0,5 mm	2800 mAh	56,0 g	VHR-3N
	LP6067100-CI	3,7 V	6,0 ± 0,5 mm	67,0 ± 1,0 mm	105,0 ± 0,5 mm	4600 mAh	88,0 g	VHR-3N
	LP8067100-CI	3,7 V	8,0 ± 0,5 mm	67,0 ± 1,0 mm	105,0 ± 0,5 mm	6000 mAh	120,0 g	VHR-3N
	LP9767100-CI	3,7 V	9,7 ± 0,5 mm	67,0 ± 1,0 mm	105,0 ± 0,5 mm	7300 mAh	147,0 g	VHR-3N
67156	LP4067156-CI	3,7 V	4,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	4700 mAh	97,0 g	VHR-3N
	LP6067156-CI	3,7 V	6,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	7200 mAh	131,0 g	VHR-3N
	LP8067156-CI	3,7 V	8,0 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	10500 mAh	175,0 g	VHR-3N
	LP9767156-CI	3,7 V	9,7 ± 0,5 mm	67,0 ± 1,0 mm	156,0 ± 0,5 mm	13000 mAh	236,0 g	VHR-3N
88120	LP4088120-CI	3,7 V	4,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	4700 mAh	93,0 g	VHR-3N
	LP6088120-CI	3,7 V	6,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	7200 mAh	135,0 g	VHR-3N
	LP8088120-CI	3,7 V	8,0 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	10500 mAh	192,0 g	VHR-3N
	LP9788120-CI	3,7 V	9,7 ± 0,5 mm	88,0 ± 1,0 mm	120,0 ± 0,5 mm	13000 mAh	208,0 g	VHR-3N

Conectores - Serie VH y PA

Connector - Serie VH y PA



Baterías LiFePo4

LiFePo4 batteries

Baterías cilíndricas alta capacidad

Cylindrical high capacity batteries

REFERENCIA	TAMAÑO	CAPACIDAD NOMINAL	CORRIENTE MAX. DE DESCARGA	VOLTAGE NOMINAL	DIAMETRO	ALTO	PESO
PART NUMBER	SIZE	RATED CAPACITY	MAX. DISCHARGE CURRENT	RATED VOLTAGE	DIAMETRE	HEIGHT	WEIGHT
LFP14500-6	AA	600 mAh	1200 mA	3,2 V	13,9 mm	48,5 mm	17,0 gr
LFP18650-12HU	1865	1200 mAh	10000 mA	3,2 V	18,9 mm	66,0 mm	39,0 gr
LFP18650-15	1865	1500 mAh	3000 mA	3,2 V	18,3 mm	65,0 mm	40,0 gr
LFP22650OC-20	1865	2000 mAh	6000 mA	3,2 V	22,4 mm	65,8 mm	52,0 gr
LFP26650-32	4/3C	3200 mAh	6400 mA	3,2 V	26,0 mm	65,5 mm	82,0 gr
LFP32600-35	D	3.00 mAh	10500 mA	3,2 V	32,2 mm	60,5 mm	125,0 gr



Baterías cilíndricas alta temperatura

Cylindrical high temperature batteries

REFERENCIA	VOLTAGE NOMINAL	CAPACIDAD NOMINAL	DIAMETRO	ALTO	PESO
PART NUMBER	RATED VOLTAGE	RATED CAPACITY	DIAMETER	HEIGHT	WEIGHT
LFPH14500-06	3,2 V	600 mAh	13,9 mm	48,5 mm	19,0 g
LFPH14650-08	3,2 V	850 mAh	13,9 mm	65,0 mm	25,0 g
LFPH18650-15	3,2 V	1500 mAh	18,0 mm	65,0 mm	40,0 g
LFPH26650-32	3,2 V	3200 mAh	26,0 mm	65,0 mm	83,0 g





B.C.E. S.r.l. - Via Regina Pacis, 54/c - I 41049 Sassuolo (MO), Italy

Tel: (+39) 0536 811616 Fax: (+39) 0536 811500 E-mail: bce@bce.it Web: www.bce.it

