

Handling Instructions

Li-Ion Battery Soft Pack (NOT a hard case battery pack)

1. Application Range

This specification is applied to the Fey Li-Ion battery soft pack:

PA-L28.K02.R002 - CGR-18650CG - 2s1p – F2-top

2. Usage Restrictions

This Li-Ion battery pack is a soft pack. It is only designed to be inserted, fixed and covered by the housing of the application. The battery pack may not be changed by end-user, only by the manufacturer of the application. In cases where the battery pack must be changeable by end user, a hard case battery pack must be used.

Do not use in a restricted spaces.

Do not use the battery pack in medical, aircraft, train, military, nuclear industry applications or any life support application without the written permission of the battery pack manufacturer.

3. General charging recommendations

It is strongly recommended that the battery pack is not charged above the maximum charging voltage of 8.4V under any circumstances. Use a proper charge system (CC / CV), which does not exceed the maximum charging voltage (named above). Exceeding this limit will lead to fire and / or explosion.

Always observe the charging temperature of the cells.

The charger should use a safety timer with proper time settings, limiting the maximum charging time.

The charger should stop charging when the initial charging current falls to 1/10.

4. Packing State

The charging capacity of the delivered packs is 20 to 35%.

5. Warrantee of packs

The warrantee period is one year after delivery. However, packs are only under warrantee during this period if an abnormality in production is found, and use under normal conditions has been observed.

6. Change of specification contents

When a change of specification is required, please consult with the manufacturer.

7. Others

Fey Elektronik GmbH claims rights on kind of assembly.

In the case of using the battery pack in applications / application fields where a risk analysis is required, please recognize that this risk analysis has to be carried out by the customer. There is no risk analysis for this product conducted by Fey Elektronik GmbH.

Handling Battery Packs - Safety

(1) **Disassembly of battery packs and cells**

Never disassemble the battery pack and cell. If the cell is disassembled gas will be generated which may cause throat irritation. The negative electrode plates may overheat and ignite. If the battery pack is disassembled, the safety protection circuit may be broken and will not operate the safety system for charge and discharge.

(2) **External short circuit of the battery pack**

Do not externally short-circuit the battery pack. This will break the battery pack and cause overheating and possible ignition.

(3) **Throwing the battery pack into fire**

Do not throw the battery pack into fire.

(4) **Throwing the battery pack into water**

Do not throw the battery pack into water. The safety protection circuit may be broken and will not operate the safety system for charge and discharge. Oxygen and hydrogen may be generated by electrolysis of the water, and the battery seal may be corroded causing leaking.

(5) **Soldering / heating of the battery pack**

Do not solder to the terminals of the battery pack. The safety protection circuit may be broken and will not operate the safety system for charge and discharge. If the battery pack is heated up over 90°C the cell may leak and short-circuit internally causing overheating and ignition.

(6) **Incorrect inserting / wrong polarity of connector / tearing cable**

Do not connect / insert battery pack + - reversely. In some machines, the battery pack may be short-circuited externally, causing overheating and ignition.

Do not tear at battery pack cable, this may cause damage and breaking of the safety protection circuit and will not operate the safety system for charge and discharge. Internal short-circuit may occur too. Both may cause overheating and ignition.

(7) **Mounting to units**

Do not mount in closely restricted structures. Combustibles released from cells during operation may ignite from sparks generated by the motor, switches, etc. Take note to immediately release combustibles from the units.

(8) **Overcharge, inverse charge, in high current**

Do not charge in higher currents the specified. Do not over-charge or inverse-charge. Gas may be quickly generated inside the cell, causing ignition or breakage. Charging by chargers not matching the battery pack requirements may cause heating, ignition and breaking.

(9) **Use in other usage**

Do not use the battery pack in other units. Specification differences may damage the battery pack or break units.

(10) **Deformation**

If the battery packs are deformed by applying pressure etc. the seal may be broken causing leakage, internal short-circuit, overheating and ignition.

(11) **Plural Use**

Do not use the battery pack connected in series or parallel.

(12) Marking and application information

Ensure the information label on the battery pack remains visible during handling.

Ensure the following information is included in the application guidelines for the battery pack in question:

- i) Li-Ion rechargeable batteries for (insert application name).
- ii) Use the charger approved by manufacturer (insert charger name).
- iii) Do not heat the battery pack or throw into fire. Do not charge and leave the battery pack the high temperatures. Do not deform, short-circuit, disassemble or modify the battery pack.
- iv) Do not allow the battery pack to be immersed in water.
- v) Do not throw the battery pack or subject to strong impact.
- vi) Do not cut, squeeze or tear at the cables of the battery pack.
- vii) Do not carry or store the battery pack with material which has sharp edges or is electrically conductive.
- viii) Do not allow the (+) terminal to come into contact with the (-) terminal or any metal objects.

The above may all cause heat, fire and explosion.

Battery Pack Handling

1) Set unit matching confirmation

Fey Elektronik GmbH offers no guarantee and accepts no responsibility for set unit matching such as life cycle, electrical noise, vibration, drop ESD, functional error at electromagnetic field, functional error by EMC or electromagnetic wave status, matching with charger, application, over-specification usage, etc.

2) EMC influence by application

Fey Elektronik GmbH offers no guarantee and accepts no responsibility for EMC related trouble for cellular phone usage or other applications. Some types of applications or battery construction may cause functional error of safety unit by EMC or electromagnetic wave status from application or battery pack. This functional error can lead to critical situations. EMC compatibility of application and battery pack has to be seriously checked by the customer.

3) Battery pack size

The battery pack may swell as a result of high temperatures or charge and discharge. Applications (main body machinery) must take into account the change in battery pack size.