Data Sheet

Lithium-ion rechargeable battery for Eppendorf Multipette® E3/E3x and Repeater® E3/E3x

International Order No. .................. 4986 602.009
Order No. North America ............... 022462407
Type Designation ..................... QW LI PB–603450 Li–ion
System ................................... Li–Ion
Nominal Voltage [V] .................. 3.7 (average)
Nominal Capacity C [mAh] ........... 1200

Dimensions [mm]:
Width (W) ................................ 34.0
Height (H) .................................. 50.0
Thickness (T) ......................... 6.4
Weight, approx. [g] .................. 25.0

Charging Method ..................... Constant Current + Constant Voltage
Discharge Cut–Off voltage [V] ......... 3.0
Overcharge protection voltage [V] .... 4.2
Max. Continuous Charge Current ...... 1C
Max. Continuous Discharge Current ... 1.5C
Operating Temperature [°C]
........................................ Charge: 0 to 45
........................................ Discharge: –20 to 55
........................................ –5 to 35
Storage Temperature [°C] ............. Suggested 25±5
........................................ ≤ 75
Storage Humidity [%] .................. ≤ 60
Impedance Initial (at 25°C) [mΩ] ...... Aluminium
Case Material ........................ The material of the product and packaging accords with RoHS standard
RoHS compliance ..................
Dimensions of battery pack:
Use Attentions:

- To ensure proper use of the battery please read the manual carefully before using it

Warnings:

- Do not expose to or dispose of the battery in fire
- Do not put the battery in a charger or equipment with wrong terminals connected
- Avoid shorting the battery
- Avoid excessive physical shock or vibration
- Do not disassemble or deform the battery
- Do not immerse in water
- Do not use the battery mixed with other different types or models of batteries
- Keep out of reach of children
- Do not solder directly to the cells/batteries
- Swallowing a battery can be harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Charge:

- Battery must be charged in an appropriate charger only
- Never use a modified or damaged charger
- Charge current: Must not surpass the maximum charge current specified in this sheet
- Charge voltage: Must not surpass the maximum voltage current specified in this sheet
- Charge temperature: Make sure that the charging temperature does not surpass the limits of operating temperatures specified in this sheet
- Use constant current and constant voltage to charge. Please connect the positive and negative terminals in the right way. Otherwise the battery may be damaged.

Discharge:

- The discharge current must not surpass the maximum discharge current specified in this sheet
- Large discharge current can cause heat and lower capacity
- Discharge temperature: Make sure that the discharging temperature does not surpass the limits of operating temperatures specified in this sheet
Over-discharge: A short-time over-discharge won’t damage the battery. But the battery will be damaged for being long time over-discharged.

Storage

- The Li-ion battery pack should be stored in a cool, dry and well-ventilated area, and should stay far away from fire and high temperature.
- The best storage temp. is 25±5 °C. The best humidity is ≤ 75 %
- The battery should be charged to about of its capacity (3.7…3.9V)
- In order to avoid over-discharge, we suggest to charge and discharge the batteries every three months. Then charge to 40% ~ 60% of its nominal capacity.
- During long-term storage, the battery may achieve over-discharge condition through self-discharge. To prevent over-discharge during storage, the battery should maintain certain capacity.

Transport Information:

- This Li-ion battery complies with the UN recommendations of “Transport of Dangerous Goods”, IATA dangerous goods regulations. It applies the U.S. DOT regulations for safe transport of Li-ion batteries. It is classified as “non-dangerous good”.
- **UN Number:** UN3481
- **Mode of transport:** Road transport ADR/RID, sea transport IMDG, air transport ICAO–TI and IATA–DGR
- Li-ion battery according to packing instruction 965–967 of IATA DGR 54th edition for transportation
- The consignment complies with the current edition–54rd 2012 of the IATA regulation
- 1. Section II of packing instruction 966(for lithium-ion cells/batteries packed with equipment, shipped as “Not Restricted” cargo).
- 2. Meets all requirements under UN manual of tests and criteria part III, subsection 38.3.
- 3. With content of less than 20Wh per cell or 100Wh per battery, the consignment can be shipped as “Non-Dangerous-Good”, so long as:
  a) the consignment does not contain any recalled and/or defective batteries.
  b) the consignment have been packed in compliance with Section II of PI966.
  c) the consignment is handled with care: flammable hazard could pass out if the packaging is damaged.
  d) if the packaging is damaged, batteries must be protected to prevent short circuit.

Transportation
Do not immerse the battery in water and protect it against splashing liquids

Do not stack more than 7 layers

The highest temperature in transportation should be less or equal than 55°C

**Composition/ Information on Ingredients**

Components of Li-ion battery:

<table>
<thead>
<tr>
<th>Component</th>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Concentration Range [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium Cobalt Oxide</td>
<td>LiCoO2</td>
<td>7782-82-5</td>
<td>30-37</td>
</tr>
<tr>
<td>Graphite</td>
<td>C</td>
<td>7782-82-5</td>
<td>15-20</td>
</tr>
<tr>
<td>Acetylene Black</td>
<td>C(SP)</td>
<td>1333-86-4</td>
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<tr>
<td>PVDF</td>
<td>[-CH2-CF2]-n</td>
<td>24937-79-9</td>
<td>0-1.0</td>
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<tr>
<td>Lithium Hexafluorophosphate</td>
<td>LiPF6</td>
<td>21324-40-3</td>
<td>12-16</td>
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<tr>
<td>Diaphragm Paper</td>
<td>PE</td>
<td>9002-88-4</td>
<td>6-10</td>
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<td></td>
<td>PP</td>
<td>9003-07-0</td>
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<tr>
<td>Aluminum Foil</td>
<td>Al</td>
<td>7429-90-5</td>
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<tr>
<td>Copper</td>
<td>Cu</td>
<td>7440-50-8</td>
<td>5-10</td>
</tr>
<tr>
<td>Aluminum Shell</td>
<td>Al</td>
<td>7429-90-5</td>
<td>10-15</td>
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