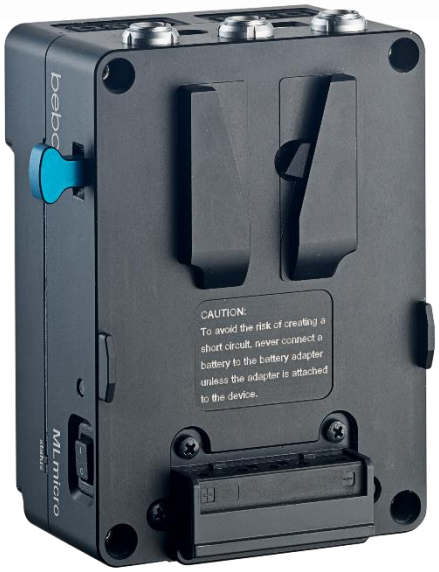
MLmicro



Rechargeable Li-Ion hot swap battery

USER MANUAL

WE STRONGLY RECOMMEND READING THIS INSTRUCTION CAREFULLY BEFORE USING!

- **FOR YOUR PERSONAL SAFETY, PLEASE OBSERVE THE SAFETY INSTRUCTIONS AND WARNINGS**
- **OBSERVE ALL COMMON AND LOCAL SAFETY REGULATIONS**
- **PLEASE KEEP THIS MANUAL FOR FUTURE REFERENCE**

Features

- 14,4V / 3Ah // 43Wh Battery with Hotswap & Buffer function and multiple output connectors
  - Rechargeable by a back-mounted battery, external charger, D-Tap or USB-C
  - Automated takeover from empty back-mounted batteries for an uninterrupted power supply
  - Visual low-capacity alarm
  - Stepless capacity display
- Compatible with micro V- and V-Mount Batteries
  - Fits directly to cameras via V-Mount and micro V-Mount plates
- External Outputs
  - 3x Lemo 2p 14,4V (unreg.) / 2A
  - 1x USB-C (PD3) 45W
  - 1x USB-A 5V / 1A
  - 2x Twist D-Tap 14,4V (unreg.) / 5A
- Automatic data communication; ARRI, Blackmagic Design, RED, Sony
- Extreme robust housing due to milled aluminium
- Zero maintenance, compact and lightweight
- Power safe mode

Safety Instructions

- For professional use only!
- Operate only with recommended batteries!
- Charge only with recommended charger!
- Risk of explosion when exposed to fire!
- Avoid contact with water!
- Do not short the battery terminals!
- Do not open or repair the device!
- Handle with care! Do not throw or drop the device!
- Do not operate in overhead or hanging applications!
- Do not expose to temperatures above 60°C/140°F or below -20°C/-4°F
- Do not overload the device (see specifications)!
- Do not supply more charging voltage than specified (see specifications)!

Storage

- The battery shall be stored within the specified temperature, humidity and state of charge ranges (see specifications).
- Storage ambient temperature range is (see specifications).
- For long-term storage (longer than 4 weeks), the battery should have a charge between 50% and 75%. The battery should be recharged every 4 weeks.
- In storage, some self-discharge will occur. It is advised to fully recharge the battery before reusing it.
- It is recommended to use the **"power safe mode"** (see below) when storing the **MLmicro.**

Warranty

- The battery is covered by a 2-year unconditional warranty on all parts, except for the cells.
- The cells are covered by a 1-year warranty at 70% of their original capacity.
- If you have any additional questions or warranty issues, please contact the appropriate bebob distributor listed at www.bebob.tv.

Disposal

- Users are legally obliged to appropriate disposal of used batteries.
- Batteries must not be disposed of in household waste - see crossed-out dustbin symbol on the battery label.
- You can return any batteries of our battery range (old and current models) to our warehouse for free-of-charge disposal.
- If the battery is not completely discharged, precautions against a potential short-circuit must be taken.

Operations

Hotswap

- The **MLmicro** will take over powering the camera when the back mounted battery falls below 12,5V.
- The LEDs will display the remaining capacity until its remaining charge falls below 20%. Then the **MLmicro** will switch over to a warning pattern, signalling its imminent depletion.
- If the back mounted empty battery is replaced with a sufficiently charged alternative (>14,5V) then the new battery will take over powering the camera/device and the additional outputs without interruption.
- If the back mounted empty battery is not replaced until the **MLmicro** capacity is depleted, then the camera/device will switch off.
- The **MLmicro** is capable of performing hot swaps with only 20% of its capacity remaining. In combination with its self-charging function this results in a potentially unlimited number of hot swaps.
- Only batteries with sufficient charge will be detected by the **MLmicro**
- Do not stack more than two batteries in combination with a hot swap battery.

Discharging

- You can use the **MLmicro** as standalone battery; at 10% capacity left, the **MLmicro** status LED will switch over to a warning pattern, signalling its imminent depletion.
- The maximum discharge current shall not be exceeded (see specifications).
- The device features separate self-resetting overload protections for each of its supply sockets.
- The main power supply will stay intact in case of a short circuit on one of the external supply sockets of the **MLmicro** (self-reset will occur within a few minutes).
- Do not discharge near flammable materials and avoid high thermal loads.
- Discharge the battery only within the specified temperature range (see specifications).

In-operation Charging (via stacked battery - automatic charge)

- The **MLmicro** can be charged by any micro-V-Mount or standard V-Mount battery mounted on its back or any compatible charger (see specifications).
- While charging the Status LED turns blue, symbolising "Charging".
- The **MLmicro** automatically performs in-operation charging if required.
- During in-operation charging the **MLmicro** is still capable of executing its hotswap function.
- We recommend to use bebob batteries for full functionality.

Charging (via standard charger)

- Do not charge batteries unattended!
- Do not charge near flammable object.
- Disconect all external loads before the charging process.
- Wait 30 minutes since the last discharge before charging.
- The **MLmicro** can be charged via any bebob V-Mount charger (or equivalent charger using the CC-CV method).
- Do not supply more charging voltage than specified (see Specifications)!
- Charge time will depend on charging power and ambient temperature.
- The optimal charging ambient temperature is from 10°C/50°F to 30°C/86°F.
- The bebob batteries can be recharged with any amount of remaining charge.
- The gauge LEDs will indicate the state of charge during the charging process.

Charging by D-Tap or USB-C

- When the output switch is turned off, the **MLmicro** can be charged via USB-C.
- USB-C might hold previous state when cable is connected.
  Please reattach the USB-C cable to establish recent charging mode.
- Charging via D-Tap is always possible.

Camera Data Communication

- The **MLmicro** will automatically select the communication with the camera:
  ARRI, Blackmagic Design, RED, Sony.

Ambient Light Detection

- The **MLmicro** will adjust the brightness of status/gauge LEDs depending on ambient light situation.

Flashlight

- To toggle the flashlight quickly press the latch twice.

Power Safe Mode

- To activate the power safe mode (in case of storage or transport), press and hold the latch continuously for 15 seconds. The **MLmicro** will shut down.
- Reactivate the **MLmicro** by either charging it with any common V-mount, D-Tap, USB-C charger or by mounting a secondary battery on its back. The connected **MLmicro** may take up to 30 seconds until it is operational.
- When the **MLmicro** is not in use for more than 5 days and voltage falls below 40%, the power safe mode will be activated automatically.

Specifications

Model	MLmicro
Material	Aluminium
Mount (battery)	micro V-Mount, V-Mount
Mount (camera)	micro V-Mount, V-Mount
Energy / Capacity (nominal)	43Wh / 3,0Ah
Voltage	
Nominal	14,4V
Max charge	16,8V
Min discharge cut-off	10,0V
Continuous discharge current	16,0A
Charge current	5,0A
Outputs	
Lemo 2Pin	3x 14,4V unreg. / 2A each // 25W cont.
Twist D-Tap	2x 14,4V unreg. / 5A each // 60W cont.
USB-C Port	1x (PD3) 5V, 9V, 12V, 15V / 3A // 45W
USB-A Port	1x 5V / 1,5A // 7,5W
Inputs	
Twist D-Tap	16,8V / 5A // 84W
USB-C Port	40W max.
LED Indicators	
Status	Discharge/Charge/Ready/Warnings
	Battery Life Condition (% of original capacity):
	green: >70%; orange: 70% to 50% ; red: < 50%
Fuel Gauge	Capacity; Warnings
Communication	SMB compatible: ARRI, Blackmagic Design, RED, Sony
Chargers	Standard charger: V-Mount (CC-CV method)
	Back mounted stacked battery
	D-Tap
	USB-C
Charge	
Mode	Standard charger (bebob VS4/VS2)
Time	1h with 5A
Ambient temperature operation range	
Charge	0°C to +55°C (32°F to 131°F)
Discharge	-20°C to +60°C (-4°F to 140°F)
Storage	-20°C to +45°C (-4°F to 113°F) (less than 70%RH)
Weight	580g
Dimensions (WxHxD)	77(85 max.)x110x57mm