



eSMART BG-DH MKII

Power adapter/distributor for eSMART lithium battery with fuel gauge – Hirose connectors

Version 1.2 Modified 15/02/2023

The **AUDIOROOT eSMART BG-DH MKII** is an ultra-small, DC power distribution box with 1 unfused SMBus pass thru output, 3 x fused outputs, 2 x un-fused auxiliary outputs and a colorful fuel gauge designed for ENG sound bags. All cables enter and exit from the bottom of the box yielding a much smaller footprint in your bag. The BG-DH MKII has a smart DC input cable and six DC outs all on rugged Hirose locking connectors.

Key features :

- Real time display of the battery's status : remaining **capacity** (%), estimated **running time** left, battery **voltage**, **current** consumption, battery pack **temperature** and battery charge/discharge **cycles count**
- **6** power outputs switchable (4/2) via **locking switches**
- 1 **unfused** Hirose output with **SMBus pass thru**
- Polyswitch 2.5A resettable fuses on 3 outputs
- A blinking **LED** indicates when the battery capacity falls below 10 %
- Compatible with all AUDIOROOT smart portable batteries
- Also compatible with third party smart batteries
- **Hirose** locking output sockets
- Sunlight readable **96 x 64 pixels OLED** color screen with 180° viewing angle
- 1 belt clip
- Very **low power** consumption
- Compact and lightweight : 130g / 65 x 50 x 30 mm

Warning

Do not try to repair this product or replace any of its elements if this user manual does not give specific instructions on how to do so. This equipment was built with surface mount components and needs special tooling for repair. The removal of the electronic PCB needs special technical skills.

Warranty

The unit has a one year warranty from date of purchase. Only officially appointed dealers or AUDIOROOT are allowed to warranty repair of AUDIOROOT products. Any damage caused by tampering, misuse or dismantling of the instrument will not be covered by the warranty and could be considered a reason for rendering the warranty null and void. Return shipping fees are always at the customer's charge.

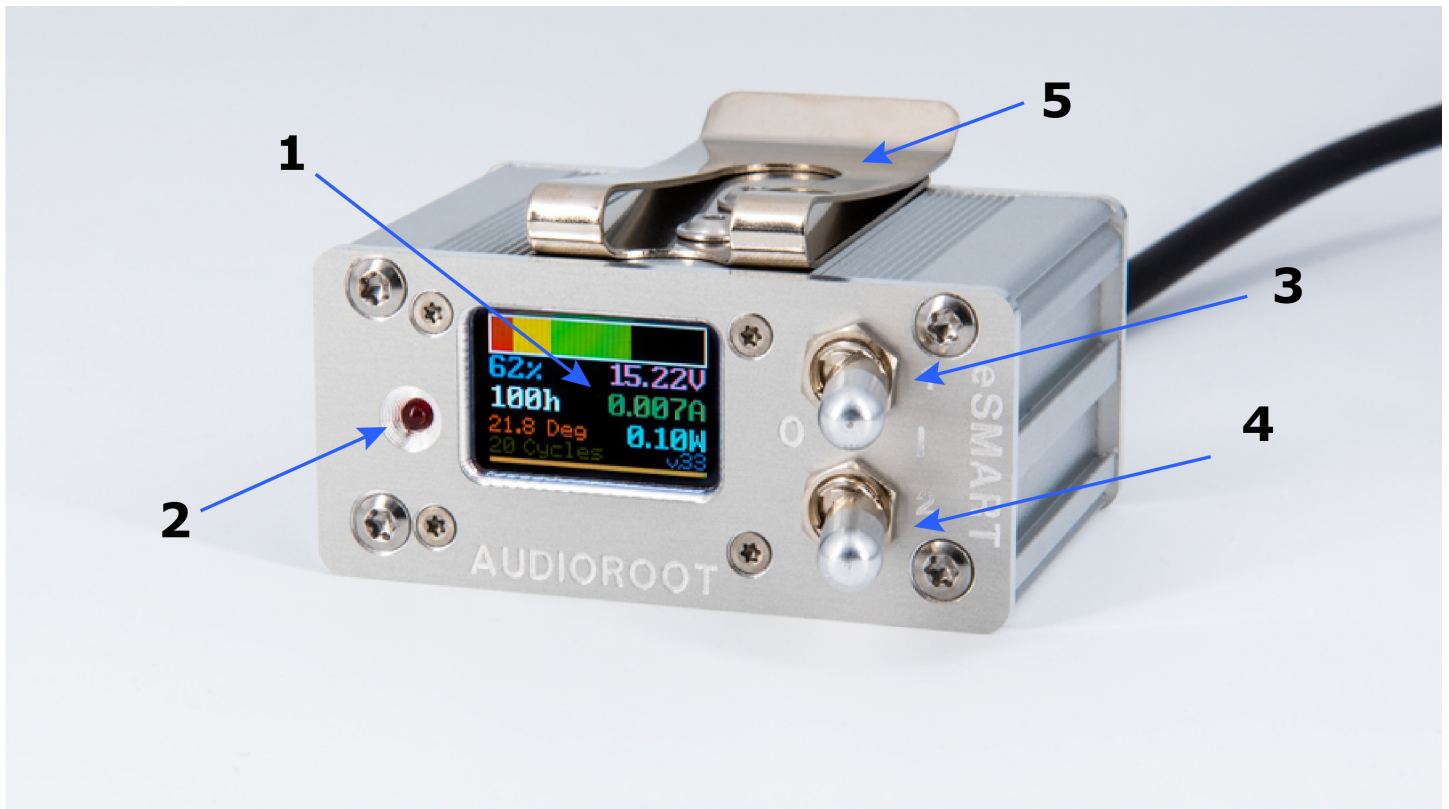
UNPACKING AND INSPECTION

The BG-DH MKII power products are carefully checked for good condition before being shipped from the factory. Despite the protective carton and rugged design, shipping may damage the unit. Check for possible carton damage when unpacking the unit. Please save the carton for return shipment if required. AUDIOROOT does not warrant against damage caused by returning products in other cartons than the original ones or improperly packing the products. If shipping damage is evident, notify the transportation company immediately. Only the consignee can file a claim with the carrier for shipping damage. AUDIOROOT will fully co-operate in such an event. Be sure to save the carton for the shipper to inspect.

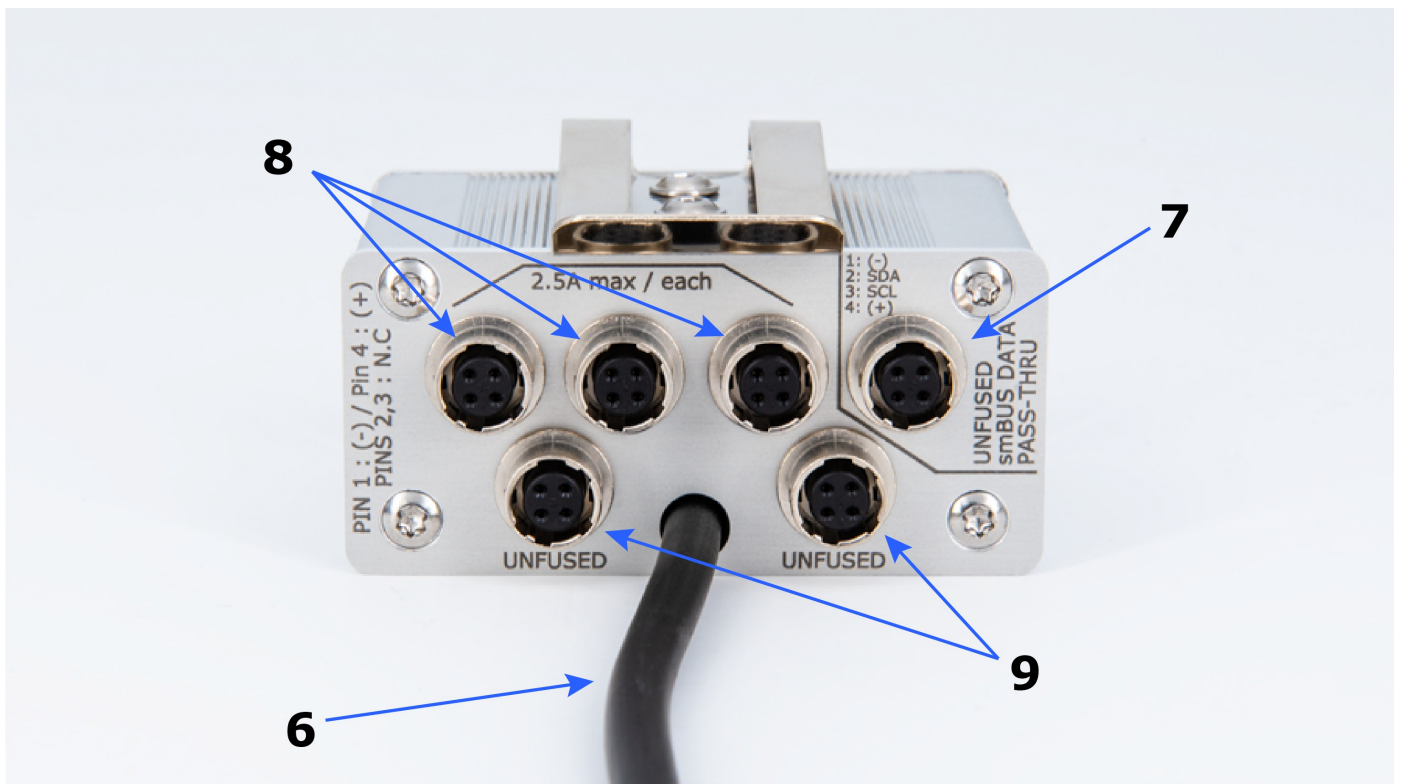
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UNIT CONNECTIONS AND CONTROLS:



1. OLED display of the BG-DH MKII. This screen show in real time the following information :
 - Battery capacity (in %)
 - Battery capacity bargraph
 - Estimated runtime left
 - Battery voltage (in V)
 - Battery discharging current (in A)
 - Power consumption (in W)
 - Battery pack temperature (in degrees C)
 - Battery pack cycle count
 - Firmware version # (vX.X)The OLED display starts whenever at least one of the front panel switch is set to the "ON" position.
2. Red LED – this LED will start blinking when the battery capacity falls below the 10% battery capacity threshold.
3. Upper locking switch. This switch enables/disables the 4 upper Hirose compatible sockets located on the back of the unit. The switch has a locking feature to prevent unintentional switching : pull the switch towards you to release the locking mechanism before flipping the switch. Flip the switch to the right to enable corresponding outputs ("ON" position). Flip the switch to the left to disable corresponding outputs ("OFF" position).
4. Lower locking switch. This switch enables/disables the 2 lower Hirose compatible sockets located on the back of the unit. The switch has a locking feature to prevent unintentional switching : pull the towards you to release the locking mechanism before flipping the switch. Flip the switch to the right to enable corresponding outputs ("ON" position). Flip the switch to the left to disable corresponding outputs ("OFF" position).
5. Belt clip. This clip can be mounted using 2 x M3 threaded holes either on the top or bottom of the unit. Please make sure to use only the M3 screws supplied with the unit to secure the belt clip to the aluminum casing.



6. 4 conductor battery connection cable. This 55cm long cable connects the BG-DH MKII to the eSMART battery. It carries power from the battery to the distributor as well as battery telemetry from the battery to the OLED fuel gauge.
7. Unfused Hirose compatible power output socket – with smBUS pass-thru. This output is enabled/disabled using the upper switch located on the front plate (#2). It is possible to connect a SMBus capable device on this output such as the Sound Devices 833, 888, Scorpio or Sonosax SX-R4+.
- Pinout :
- 1 : Battery (-)**
 - 2 : Smbus data**
 - 3 : Smbus clock**
 - 4 : Battery (+)**

The output voltage on this output is the same as the battery connected to BG-DH MKII (from 10.0V up to 16.8V)

8. 3 x 2.5A polyswitched fused Hirose compatible power output sockets. These outputs are enabled/disabled using the upper switch located on the front plate (#2). Each of the 3 outputs is protected against excessive current draw : the internal polyswitch fuses will disable any output if the current is >2.5A. The polyswitch will self reset once current draw falls below 2.5A and after a cool down period. Please note that no internal fuse can be manually reset inside the unit.
- Pinout :
- 1 : Battery (-)**
 - 2 : not connected**
 - 3 : not connected**
 - 4 : Battery (+)**

The output voltage on this output is the same as the battery connected to BG-DH MKII (from 10.0V up to 16.8V)

9. 2 x Hirose compatible unfused power output sockets. These outputs are enabled/disabled using the lower switch located on the front plate (#3). Current draw on these outputs is not limited.
- Pinout :
- 1 : Battery (-)**
 - 2 : not connected**

3 : not connected

4 : **Battery (+)**

The output voltage on this output is the same as the battery connected to BG-DH MKII (from 10.0V up to 16.8V)

IMPORTANT NOTE - SHORT CIRCUIT PROTECTION:

All 6 outputs of the BG-DH MKII are not individually protected against short circuits.

In the event of an external short circuit on any of the 6 outputs (typically when using a poorly wired Hirose cable/connector) a very high current draw will instantaneously activate the over current protection feature of the eSMART battery. As a result the complete system (battery, distributor and all equipment connected) will shut down to prevent catastrophic failure of the battery and thermal runaway. Please note that all li-ion batteries have this kind of overcurrent protection built-in as this is a mandatory safety feature requested by all certification standards.

To recover from such an event the short circuit condition must be removed (i.e by finding and disconnecting the faulty cable/connector/equipment) from the battery distributor. The eSMART battery will automatically try to reactivate its output every 30 to 70 seconds.

WARNINGS :

- Do not short circuit the output(s) of the BG-DH MKII.
- Do not expose the BG-DH MKII and its battery to temperatures above 120 deg. F (50 deg. C).
- Disconnect the battery from the BG-DH MKII for transport aboard passenger (PAX) or cargo (CAO) aircrafts.
- Switch the BG-DH MKII OFF when not in use.