

# HBEM03

Constant Current, Self-Test



## Product Description

HBEM03 is a combined LED driver & emergency control gear with Bluetooth module built inside. HBEM03 is ideal for lighting manufacturers with new plastic luminaire design. It can conduct monthly or annually testing automatically and user can get email notification as soon as fault is detected. Meanwhile, simple device setup and commissioning can be done via **Koolmesh™** app.



## App Features

- Quick setup mode & advanced setup mode
- Floorplan feature to simplify project planning
- Web app/platform for dedicated project management
- Koolmesh Pro iPad version for on-site configuration
- Grouping luminaires via mesh network
- Scenes
- Dusk/Dawn photocell (Twilight function)
- Push switch configuration
- Compatible with EnOcean BLE switches
- Internet-of-Things (IoT) featured
- Device firmware update over-the-air (OTA)
- Device social relations check
- Bulk commissioning (copy and paste settings)
- Offline commissioning
- Different permission levels via authority management
- Network sharing via QR code or keycode
- Remote control via gateway support HBGW01
- Interoperability with Hytronik Bluetooth product portfolio
- Continuous development in progress...

## Hardware Features

- Photocell Advance™
- Insulated terminal cover with cord restraint
- Active PFC design
- Over-temperature Protection
- Short-circuit Protection
- Overload Protection
- 5-year warranty, designed for long lifetime up to 50,000 hours

## Emergency Features

- Multi emergency wattage: 2W/3W/4W
- Emergency working mode:
  - Normal emergency mode
  - Rest mode
  - Inhibit mode
  - Extended emergency mode
- Monthly/Annually Automatic Testing with report generation
- Battery status check via Koolmesh app
- Automatic email notification when fault is detected
- Retrievable usage data and report history

**Bluetooth 5.0 SIG mesh**

Smartphone app for both iOS & Android platform

for iOS

for Android

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Koolmesh Pro app for iPad

for iPad

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Web app/platform: [www.iot.koolmesh.com](http://www.iot.koolmesh.com)

for Web




Fully support EnOcean self-powered switch module PTM215B (HBES01/W & HBES01/B)


## Technical Specifications

Bluetooth Transceiver	
Operation frequency	2.4 GHz - 2.483 GHz
Transmission power	4 dBm
Range (Typical indoor)	10~30m
Protocol	 Bluetooth® 5.0 SIG Mesh

## LED Current Selection

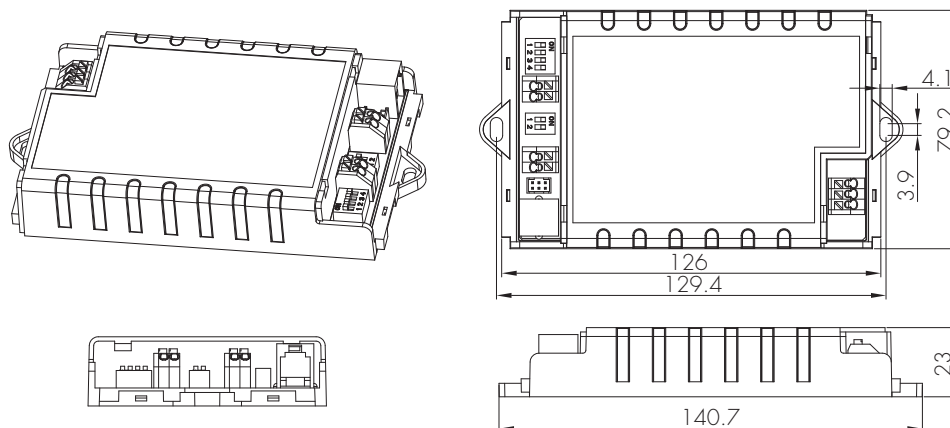
1050mA	●●●●●	
900mA	●●●●○	
700mA	●●●○●	
500mA	●○○○●	
350mA	○○○○●	
	1 2 3 4	

## Emergency Power Selection

4W	○●	
3W	●○	
2W	○○	
	1 2	

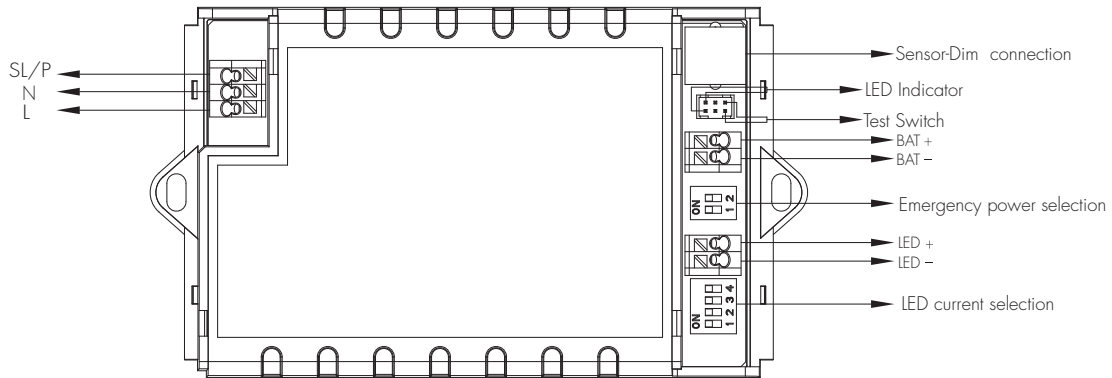
Model No.	HBEM03				
Mains voltage	220~240VAC 50/60Hz				
Mains current	0.24~0.22A				
Max. output wattage	40W				
Output wattage / LED current / voltage	1050mA 24-38V 25-40W	900mA 24-45V 16-40.5W	700mA 24-48V 16-33.5W	500mA 24-50V 12-25W	350mA 24-50V 8-17.5W
Max. Efficiency	88%				
Output voltage(U-out Max.)	60V				
Power factor	>0.9				
Operation temperature	0~+50℃				
Storage temperature	-10~+45℃				
Battery pack	BPC83, BPC84				
Battery Type (LiFePO4) / Charge current / Discharge current / Max. load / Discharge hour	BPC83&84: 6.4V/3.4AH, 0-500mA, 0.4A, 2W@24-50VDC, 3H 6.4V/3.4AH, 0-500mA, 0.56A, 3W@24-50VDC, 3H 6.4V/3.4AH, 0-500mA, 0.8A, 4W@24-50VDC, 3H				
Charge period	24h				
Max. case temp.	85℃				
Over-heat protection	Over-heat protection with auto-reset.				
Battery abnormal protection	Short circuit protection				
	Reverse connection protection				
	Deep discharge				
EMC standard	EN55015, EN61547, EN61000-3-2, EN61000-3-3				
Safety standard	EN61347-1, EN61347-2-7, EN62034, IEC62133				
Certifications	CE, EMC, ROHS				
IP grade	IP20				

## Mechanical Structure & Dimensions

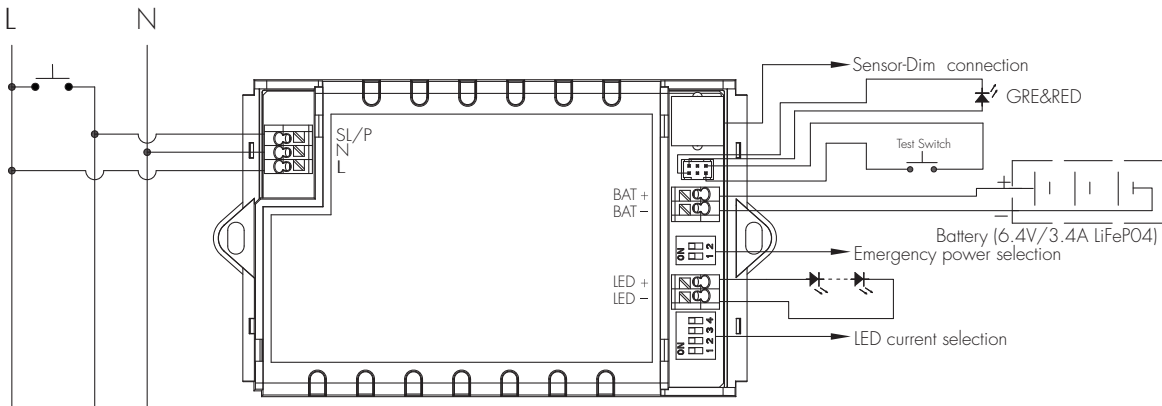


## Wiring Diagram

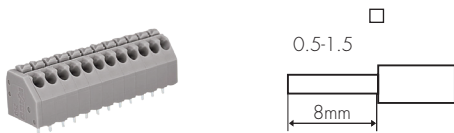
For maintained lights that can be switched/dimmed/brightened



220-240Vac  
50/60HZ



## Wire Preparation



Solid or Stranded wire type 0.75 - 1.5mm<sup>2</sup>

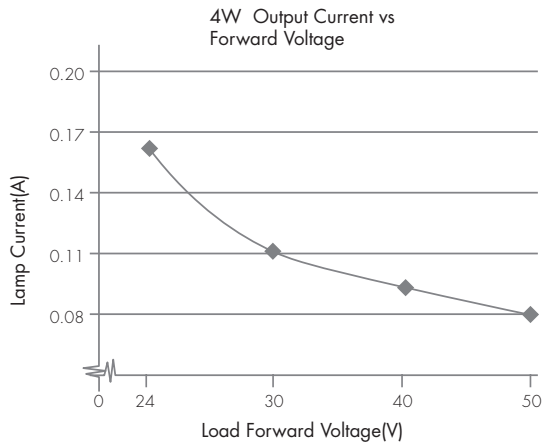
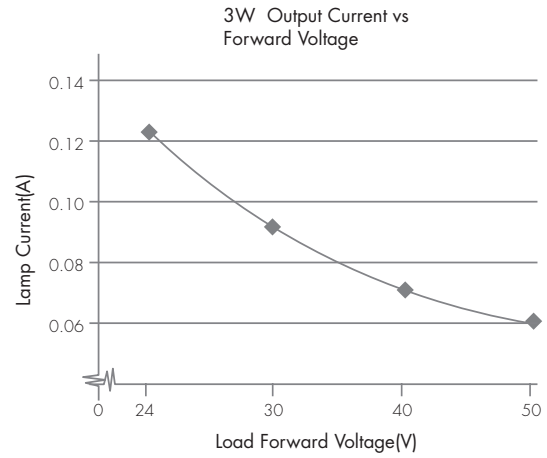
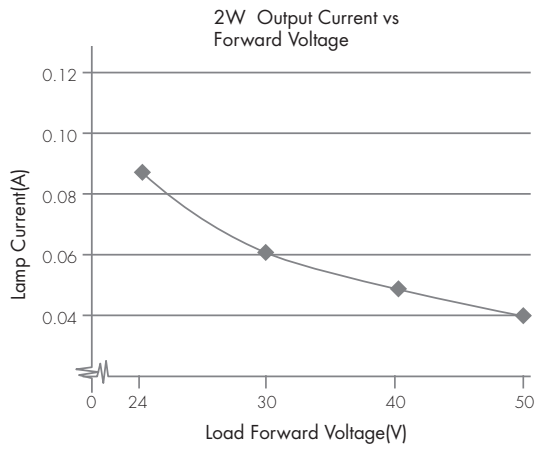
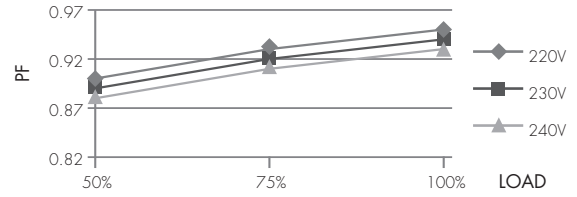
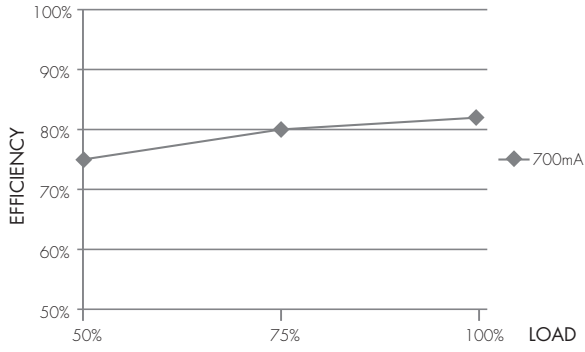
To make or release the wire from the terminal, use a screwdriver to push down the button.

## Circuit Breaker Information

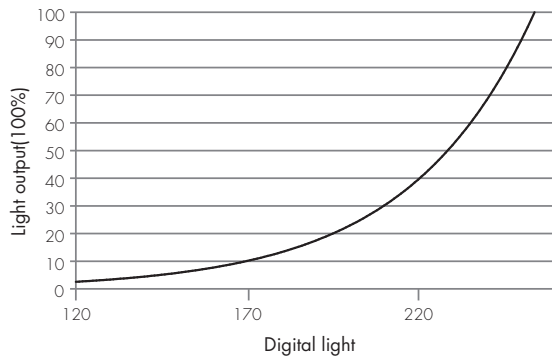
Automatic circuit breaker type	B16A	B10A	B13A	B20A
HBEM03	40	25	32	50

Calculation uses typical values from ABB series S200 as a reference. E.g. Maximum amount =  $16 / (P_n / 230)$ . We recommend to use no more than 60% of the data as the actual max. number of drivers in real application. Actual values may differ due to used circuit breaker types and installation environment.

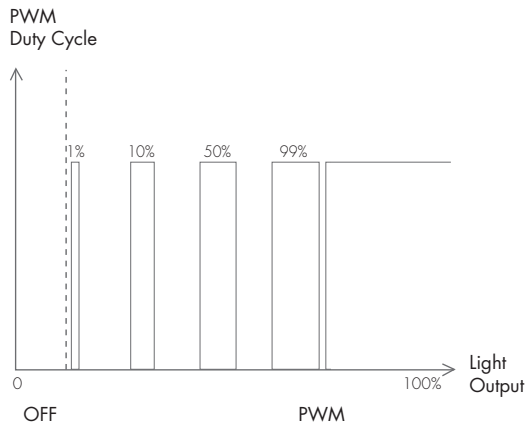
## Performance Characteristics



## Dimming Characteristics



## Dimming Profile



Dimming range	Dimming technique
0%	OFF
1-100%	PWM

## Normal Mode

It is the mode in which mains supply is available, with the battery charged or charging. In this mode, HBEMO3 is a dimmable emergency driver, with ability to create scenes and controllable by motion sensor, Push switch and app.

## Emergency Mode

It is the mode in which mains supply has failed and whilst the control gear is powered by the battery until deep discharge point. In this mode, HBEMO3 is unable to be controlled by motion sensor, Push switch and app. However, some emergency parameters can still be configured via the app, such as time scheduled for self-test, duration for extended emergency mode etc.

## Rest Mode

It is the mode in which the luminaire is intentionally off whilst the control gear is powered by the battery. To enter this mode, the prerequisite is that there is no mains supply. In this mode, the luminaire will be turned off automatically and HBEMO3 is powered by the battery. If the luminaire is forced to turn on in this mode, HBEMO3 will then be adjusted to emergency mode. When mains supply is recovered, HBEMO3 will return to normal mode.

## Inhibit Mode

It is the mode in which HBEMO3 is powered from the mains but prevented from going into emergency mode in the event of mains failure. Please enter this mode only in special applications whereby emergency function is not needed, such as when electrician needs to cut off power supply when doing examination and maintenance work for HBEMO3.

## Extended Emergency Mode

It is the mode in which the control gear continues to operate the lamp in the same way as in emergency mode for the programmed prolong time after the restoration of the mains supply. When this mode is enabled, HBEMO3 will remain in emergency mode even when mains supply is recovered. In this mode, the user has to set the time extended for emergency mode; when the time extended elapses, HBEMO3 will then return to normal mode.



## Self test

HBEMO3 carries out routine test on emergency lighting based on pre-programmed time via the app or after receiving manual commands from the app. During the self test process, tests for load connections (such as open circuit, short-circuit) and battery connections (such as open circuit, short-circuit, polarity reversal etc. will be carried out.

## LED Diagnostics

Indicator Colour	Status	Meaning
<b>GREEN SOLID</b>	Device OK	All OK, AC power is present. Battery is connected & charging
<b>GREEN FAST FLASH</b> (0.1s ON, 0.1s OFF)	Monthly test	AC power is present. Monthly test in progress
<b>GREEN SLOW FLASH</b> (1s ON, 1s OFF)	Annual test	AC power is present. Annual test in progress
<b>RED SOLID</b>	LED fault	LED is open circuit, short circuit or has otherwise failed in some way, Fault can indicate the live status or the result of a test
<b>RED FLASH</b> (1s ON, 1s OFF)	Battery fault	Battery failure (Battery failed the duration or functional test, battery appears to be defective, battery has incorrect voltage). Fault can indicate the live status or the result of a test
<b>RED /GREEN OFF</b>	No power available	AC power is lost, unit in emergency mode

## Battery Pack Options

Package code	Picture	Spec.	Size (mm)	Duration	Recharge Time	Accessories
BPC83		LiFePO4, 6.4V, 3.4Ah	110x55x27	3h @3W 3h @2W 3h @4W	24h	Battery bracket, LED indicator, Test switch
BPC84		LiFePO4, 6.4V, 3.4Ah	170x30x27	3h @3W 3h @2W 3h @4W	24h	Battery bracket, LED indicator, Test switch

Please kindly note that the optimal storage temperature should be 22°C to 28°C.  
 The relative humidity (RH) for battery storage should be 45% to 85%.  
 Keep the battery wires unconnected if the battery is intended to be stored for more than 3 months.  
 The maximum battery cycles under 55°C should not exceed 80 times.  
 Please kindly charge battery for 24 hours before using.  
 Do not short-circuit the battery pack.

## Additional Information / Documents

1. Regarding precautions for Bluetooth product installation and operation, please kindly refer to [www.hytronik.com/download/knowledge](http://www.hytronik.com/download/knowledge) ->Bluetooth Products - Precautions for Product Installation and Operation
2. Regarding precautions for LED driver installation and operation, please kindly refer to [www.hytronik.com/download/knowledge](http://www.hytronik.com/download/knowledge) ->LED Drivers - Precautions for Product Installation and Operation
3. Regarding precautions and usage for LiFePO4 battery, please kindly refer to [www.hytronik.com/download/knowledge](http://www.hytronik.com/download/knowledge) ->LiFePO4 Battery - Precautions and Usage
4. Data sheet is subject to change without notice. Please always refer to the most recent release on [www.hytronik.com/products/bluetooth-technology](http://www.hytronik.com/products/bluetooth-technology) ->Bluetooth Emergency Driver/Inverter
5. Regarding Hytronik standard guarantee policy, please refer to [www.hytronik.com/download/knowledge](http://www.hytronik.com/download/knowledge) ->Hytronik Standard Guarantee Policy