

HBGW03/R

BACnet Gateway | Dual-band Wi-Fi or Ethernet | DIN rail/wall/flat surface mounting

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SENSORS & LIGHTING CONTROL



Benefits

Compact: Enables flexible installation in various environments.

Seamless: Connects Bluetooth lighting devices to BMS for unified control.

Efficiency: Centralized control speeds up operations and saves energy.

Applications

Building automation and lighting systems

Industrial & Warehouse Logistics

Network cabinets or enclosures

Check out the complete system solution on the website:

<https://www.hytronik.com>



Product Description

HBGW03/R is an industrial-grade BACnet gateway with a built-in nRF52840 Bluetooth module. It converts Bluetooth device data into BACnet or Ethernet signals, enabling seamless integration of Bluetooth lighting networks with BMS for unified monitoring and control. Designed for flexible installation, the gateway supports DIN rail, wall, or flat surface mounting, and features an external antenna to enhance signal stability and communication range. With its compact footprint (95.7×70×28.7 mm) and robust performance, HBGW03/R ensures reliable operation and easy deployment in diverse industrial and commercial applications.

Properties

- Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.8GHz
- 2GB LPDDR4-3200 SDRAM, 32GB SD Card
- 2.4 GHz 52840 Bluetooth module
- Gigabit Ethernet
- USB-C and Ethernet ports
- 5V DC via USB-C connector (minimum 3A)
- Power over Ethernet (PoE) enable

Functions and Features



Koolmesh
(See bluetooth control
features below)



BACnet Gateway

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Specifications

System Capacity	
Capacity and performance	Up to approximately 200 Bluetooth mesh devices per gateway (The higher requirement for network traffic, the smaller of a network must be) One network per gateway.
Processor	64-bit SoC @ 1.8GHz
Network protocol	BACNet IP

Electrical Data	
Bluetooth frequency	2.4 GHz - 2.483 GHz
Bluetooth transmit power	19.5±1 dBm
Bluetooth range	50m
Bluetooth system	Koolmesh
Operating voltage	DC5V/3A
Power supply	USB-C: 5 VDC, 3 A Ethernet (POE): 5 VDC, 3.5 A

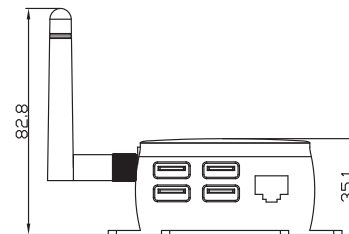
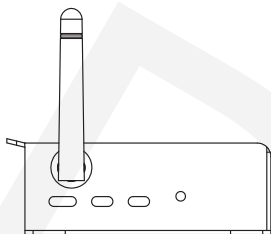
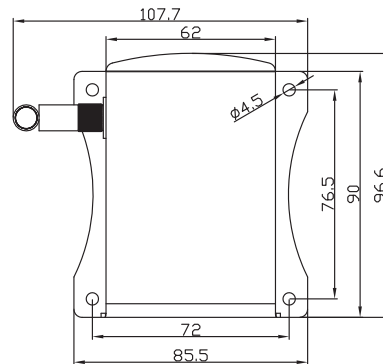
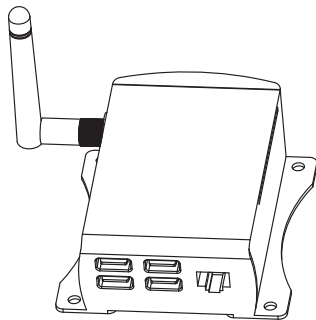
Technical	
Ambient temperature	0°C - +50°C
Storage temperature	-10°C - +60°C
Humidity	20% - 80%
IP rate	IP20
Insulation	Class II

Standards	
EMC	EN55035, EN301489-17
LVD	EN IEC62368, EN 55032
RED	EN 301489-1, EN 30328
Certification	CB, CE , EMC, RED, RCM

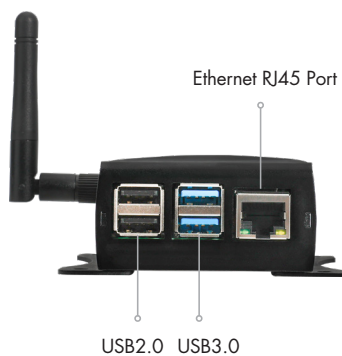
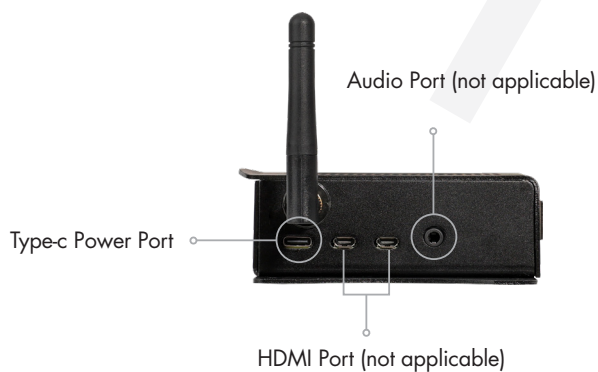
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Technical Drawing



Interface Function



*Hold a strong magnet for 5 seconds to reset Bluetooth settings without affecting Wi-Fi or Ethernet.

BACnet Integration & Functional Overview

System Requirements

1. The BACnet gateway currently supports only the BACnet protocol.
2. The mesh network must be created and commissioned using the Koolmesh application.
3. The gateway must be added to the mesh network through the Koolmesh application.
4. The gateway and the laptop running the third-party system must be connected to the same local Ethernet network.
5. Connect to Koolmesh cloud to download the settings and parameters from mesh network is needed.
6. OTA updates must be performed both via the Koolmesh App and the BACnet gateway web page
7. The gateway must be installed within radio range of at least one relay node.
8. The gateway should be placed away from potential sources of interference, such as high-power electrical equipment, transmitters, or building structures that may block the radio signal.
9. The IP web interface uses default login: admin / admin. Please change the password after first login
10. Any change or adjustment on the network, you need to re-boot the BMS gateway or reload web Json file manually on the web page to synchronize to the settings.

BACnet Feature Summary

The BMS Gateway supports multiple BACnet object types to enable smooth integration with Building Management Systems.

The following table summarizes the current implementation status across different control levels.

Legend: ✓ = Supported ● = Under development — = Not available

Function	Description	Object Type	Device	Zone	Group	Scene
ON/OFF Output	Command ON/OFF	BO	✓	✓	✓	—
ON/OFF Input	State return ON/OFF	BI	✓	✓	✓	—
Dimming Output	Command gradation	AO	✓	✓	✓	—
Dimming Input	State return Gradation	BI	✓	—	—	—
CCT Output	Command CCT	AO	✓	✓	✓	—
CCT Input	State return CCT	AI	✓	—	—	—
Motion Sensor input	Motion Sensor Trigger	BI	✓	—	—	—
Presence Input	Presence detection (0=absent, 1=present)	BI	✓	✓	—	—
Daylight sensor lux value	Ambient brightness	AI	✓	✓	—	—
Consumption meter reading	Energy consumption	AI	✓	—	—	—
Cumulative consumption meter reading	Cumulative energy consumption	AI	—	✓	—	—
Group/zone Input	Identification of the group zone number associated with each luminaire	Characterizing value	—	✓	✓	—
Return to automatic mode	Switch from manual mode to auto mode	BO	✓	✓	✓	—
Light fail return	State return failure detected or not	Multistate Input	✓	—	—	—
Scene recall	Scene recall	BO	—	—	—	✓

Functional Notes

- ON/OFF output: 1=on, 0=off
- Motion sensor input: 1=motion detected, automatically returns to 0 after 3 seconds.
A transient signal is generated when motion is detected.
- Presence input: 0 = no presence, 1 = presence detected (If any detector within a zone detects presence, the entire zone is considered occupied.).
- Daylight sensor lux value: Not supported for Photocell Advance. Ensure the control object in the Koolmesh app is configured correctly; otherwise, the lux value will be unavailable on third-party systems.
- Consumption & cumulative consumption meter reading: Not connected to the Koolmesh cloud. Shelly energy metering is therefore not supported.
- Return to automatic mode: 1=return to auto mode, automatically returns to 0 after 3 seconds.
- Light fail return : 0=ok, 1=Light fail, 2=offline (available on Standard DALI and Standard D4i only)
- Scene recall: 1=scene activated, automatically returns to 0 after 3 seconds.

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Gateway 2.4G/5G-to-WiFi Internet Access Solution

For projects where wired Ethernet is not available, a user-supplied portable WiFi dongle can be inserted into the USB port, allowing the gateway to access the internet via WiFi.



Portable WiFi Hotspot
(for reference only)

This portable WiFi dongle is not included in the package and must be provided by the customer.

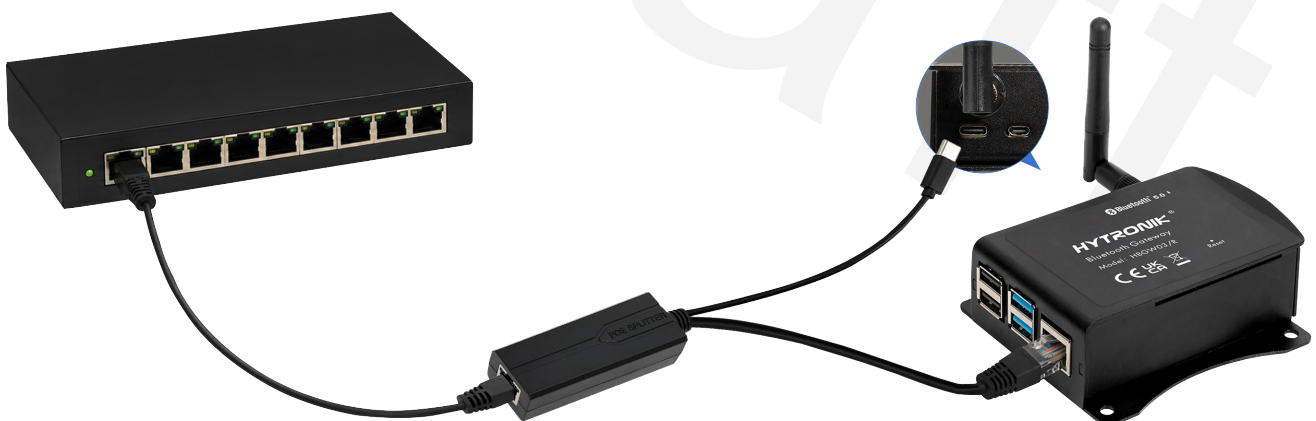


Physical Drawing
(for reference only)

The adapter must be plugged into the USB2.0 port to function properly.

*After inserting the device into the USB port, set up Wi-Fi via the Wi-Fi Companion web page. Then connect to Wi-Fi manually in the Koolmesh app under "Network Connection Status."

Connection diagram



PoE Connection: PoE Switch → Standard Ethernet Cable → HAPOE → USB Type-C → Gateway

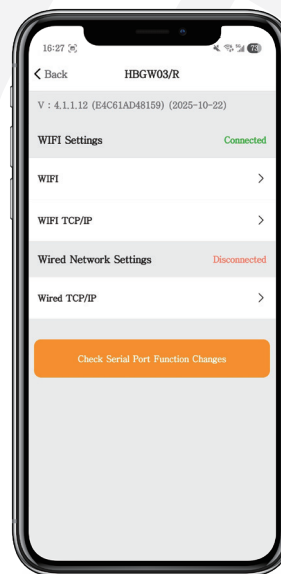
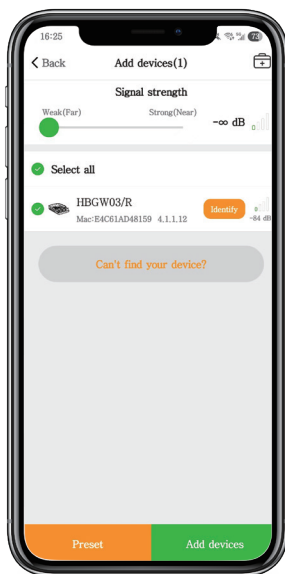
*Note: Ethernet connection is recommended for commissioning where available, as it provides a faster and smoother connection experience. Wi-Fi connection is also supported and is suitable for installations where Ethernet cabling is not convenient. Depending on the on-site environment, the first connection may require a little more time when Wi-Fi is used.

Commissioning Instructions and Precautions

Follow the steps below to correctly power up and commission the gateway:

1. Check Indicators
 - The red LED indicates the power status.
 - The green LED indicates the SD card operation status.
2. Before Powering On
 - Make sure the SD card is properly inserted before connecting the power supply.
3. Power-On Sequence
 - After powering on, the red LED will flash, and after about 5 seconds, you will hear three short beeps (“beep-beep-beep”), indicating that the gateway has started successfully.
 - If the green LED stays solid on, it means the SD card is not inserted correctly or has not been read successfully.
4. Adding the Device (via Koolmesh App)
 - Open the Koolmesh application.
 - Tap the “+” icon in the upper-right corner to add a new device.
 - Select the device type, then tap “Add devices” in the lower-right corner.
 - Choose the installation area where the gateway will be placed.
 - Once the connection is successful, the device will appear in the “DEVICES” list.
 - Tap the device name to enter its settings and connect it to WiFi.

Note: The gateway does not support Open Wi-Fi or Captive Portal Wi-Fi networks. Please ensure the gateway is connected to a standard secured Wi-Fi network for normal operation.



Third-party system

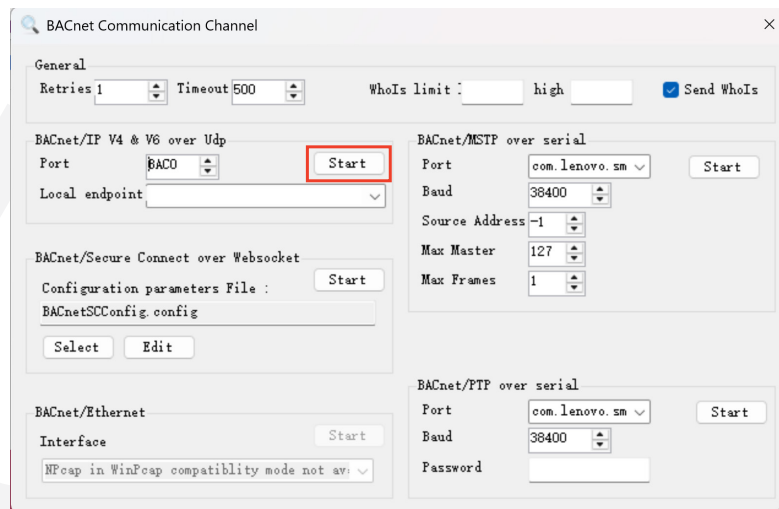
When commissioning the gateway with a third-party BACnet (e.g., YABE), please ensure the following steps are followed for proper setup and communication :

1. Network Connection

The gateway and the computer running the third-party system must be connected to the same local Ethernet network.

2. System Launch

Open the third-party system interface (e.g., YABE), and click “Start” to begin scanning.



3. Function Access

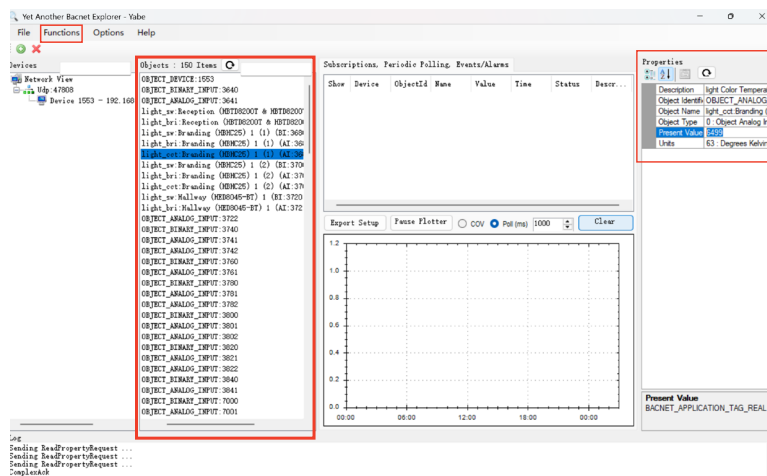
After the interface loads, click “Function” in the upper-left corner, then select “Send Whole” to broadcast a discovery request.

4. Device Display

All devices available on your local network will now appear in the list, allowing you to view and control them.

5. Parameter Adjustment

Click the device you wish to modify. The control panel on the far right side of the interface allows you to adjust the related parameters.



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Accessories

Power Adapter (Included in the package)

Two types of power adapters (UK and EU) are available for the gateway, providing power via the USB-C port.



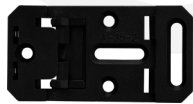
EU Charger



UK Charger

Mounting clip (Included in the package)

Mounting clip kit, fixed to the back of the gateway with three screws, allowing installation onto the metal rail of power distribution boxes.



35mm Mounting Clip



Installation Site



Rail Installation Legend

Compatible Products (for full functionality)

POE Splitter (not included in the package)

HAPOE/C is a POE Splitter that separates power and data in an Ethernet cable. It enables HBGW03/R to obtain power and data via a single Ethernet cable, simplifying installations and eliminating the need for extra power sources.

For more details, please refer to <https://hytronik.com/product/hapoe-c>



Safety Precautions

- Use the BACnet Gateway only as described in this manual.
- Ensure all parts of the gateway are present, genuine, and free from damage.
- Verify that the power source matches the specifications on the rating plate.
- Do not carry or lift the gateway by its cables.
- Keep the gateway dry; do not expose it to rain, snow, or frost.
- Keep the power sockets clean and free of dust.
- Only authorized service personnel should repair the gateway.

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Koolmesh - Operating guide

Bluetooth 5.0 SIG Mesh



Smartphone(ios)



Smartphone (Android)



iPad



Web

For additional information, including project and network, device, and scenes, please refer to: <http://faq.koolmesh.com/faq/en/index.html>

Shared Koolmesh App Features

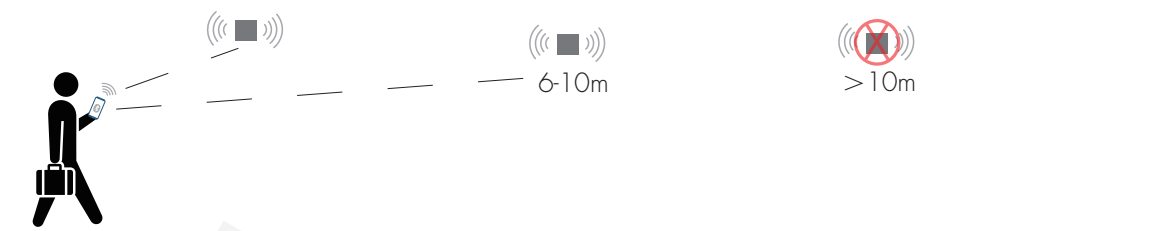
- | | |
|---|--|
|  Quick setup mode & advanced setup mode |  Power-on status (memory against power loss) |
|  Web platform for project deployment & data analysis |  Offline commissioning |
|  Koolmesh Pro iPad for on-site configuration |  Bulk commissioning (copy and paste settings) |
|  Floorplan feature to simplify project planning |  Different permission levels via authority management |
|  One-key device replacement |  Network sharing via QR code or keycode |
|  Device social relations check |  Interoperability with Hytronik Bluetooth product portfolio |
|  Staircase function for quick setup |  Internet-of-Things (IoT) featured |
|  Remote control via Hytronik gateway & touch screen HPAD-TSJASE1 |  Device firmware update over-the-air (OTA) |
|  Heat map |  Alert for excess lux / temperature / humidity via multi-meter HBLM01 |
|  Grouping luminaires via mesh network |  Seamless integration with BMS via Hytronik BMS gateway |
|  Scenes |  Test mesh network connection quality |
|  Schedule |  Compatible with Shelly energy metering |
|  Astro timer (sunrise and sunset) |  Continuous development in progress... |

Device-specific Koolmesh App features

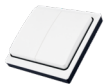
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|---|---|
|  Dynamic daylight harvest auto-configuration |  Displays Luminaire Status & Energy Consumption Data |
|  Troubleshooting & Diagnosis |  Compatible with EnOcean kinetic switches |

Smart Phone to Device Range

1. The smart device with the installed App typically has a range of 10m, which may vary between devices.
2. During the commissioning process, the installer must be within range of the devices while searching for them to add to the network.
3. Once the devices are added to the network via the App, they will begin communicating within the wireless mesh.
4. After the network is complete, all devices can be accessed from the smart device within a 20m range of a single point.



Bluetooth Network Components

	HBGW02 Bluetooth Mesh Gateway Dual-band Wi-Fi wall/flat surface mounting www.hytronik.com/product/HBGW02		HBGW02/D Bluetooth Mesh Gateway Dual-band Wi-Fi wall/flat surface mounting www.hytronik.com/product/HBGW02/D
	HBGW03/R BACnet Gateway DIN rail/wall/flat surface mounting Remote access/monitoring www.hytronik.com/product/HBGW03		HBLM01 Multi-meter Bluetooth & NFC Lux Measurements www.hytronik.com/product/HBLM01
	HPAD-TSJASE1 Bluetooth Touch Tablet Gateway Integrated Switch Boxes www.hytronik.com/product/HPAD-TSJASE1		HBKS01/W Bluetooth Kinetic Switch One-gang White Color www.hytronik.com/product/HBKS01-W
	HBKS01D/W Bluetooth Kinetic Switch Single Rocker White Color www.hytronik.com/product/HBKS01D-W		HBKS02/W Bluetooth Kinetic Switch Two-gang White Color www.hytronik.com/product/HBKS02-W
	HBKS02D/W Bluetooth Kinetic Switch Double Rocker White Color www.hytronik.com/product/HBKS02D-W		HBKS03/W Bluetooth Kinetic Switch Three-gang White Color www.hytronik.com/product/HBKS03-W
	Switch (EnOcean) - HBES01/B Bluetooth Kinetic Switch Single Rocker White Color www.hytronik.com/product/HBES01/B		Switch (EnOcean) - HBES01/W Bluetooth Kinetic Switch Three-gang White Color www.hytronik.com/product/HBES01/W

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Extension

5-year Warranty



All Hytronik products are supplied with a 5-year warranty against defect in design or manufacture. The warranty applies to all electronic control gears supplied by Hytronik and is applicable to the party to which the sale was made. The warranty is not transferable to a 3rd party and compatibility with external components are the responsibility of the finished goods manufacturer. With today's multi-national sourcing strategies, we offer an unrivalled universal warranty with support available in regions where Hytronik has its own office or authorized representation, regardless of where the Hytronik product was purchased. Furthermore, we operate a 24-hour response policy to any claim. The full warranty policy is available upon request or from our website.

BACnet Gateway



The Hytronik BACnet Gateway connects Bluetooth lighting networks with Building Management Systems (BMS) via BACnet or Ethernet. It enables centralized control, real-time monitoring, and seamless integration within building automation environments, providing a smart and reliable solution for modern lighting systems.

Check out for further explanation of features

<https://hytronik.com/solutions/lighting-control-features>