

A Complete Guide to Implementing Bluetooth LED Tags for Efficient Warehouse Picking

Product	Image	Dimensions	Weight	Specifications	Installation	UHF
BG05		φ17mm*50mm(H)	211g	<p>Communication: Ethernet, Wi-Fi</p> <p>Communication Range: 220-50m (Environment Dependent)</p> <p>Power Supply: DC 9V / PoE</p> <p>Protocol: MQTT</p>	Ceiling Mount	✗
BG06		170*170*22mm	238.6g	<p>Communication: Ethernet, Wi-Fi</p> <p>Communication Range: 20-50m (Environment Dependent)</p> <p>Power Supply: DC 9V / PoE</p> <p>Protocol: MQTT</p>	Ceiling Mount	✗
BGC5		177*80.2*14.8 mm	594g	<p>Engine: CM710-1 (Based on mpnj E710 chip)</p> <p>Frequency: 920-925MHz / 902-928MHz / 865-868MHz, 2.4G</p> <p>Battery Capacity: 4500mAh</p> <p>Bulk Read Rate: >500 tags/sec (Circular Polarization)</p> <p>2.4G Communication Range: Forward 25-30m (Environment Dependent)</p>	No Installation Required	✓
BGH1		174.6*80.5*135mm	630g	<p>Engine: Guoxin 3rd Gen X3M1 Chip</p> <p>Frequency: 920-925MHz / 902-928MHz / 865-868MHz, 2.4G</p> <p>Battery Capacity: 4500mAh</p> <p>Bulk Read Rate: 1300+ tags/sec (Circular Polarization)</p> <p>2.4G Communication Range: Forward 50-60m (Environment Dependent)</p>	No Installation Required	✓

industry. The company is positioned as a trusted Bluetooth LED tag solution provider for industrial warehousing and manufacturing environments, serving global clients seeking intelligent automation in large-scale warehouse operations.

With a strong focus on innovation, Xminnov delivers a wide range of products including RFID tamper-proof tags, RFID seals, LED tags, sensor tags, and Bluetooth tags. These solutions are engineered to perform reliably in demanding industrial conditions while providing real-time data visibility across warehouse and production workflows.

As modern manufacturing and large warehouse operations become increasingly complex, the demand for speed, accuracy, and automation continues to grow. Bluetooth LED tag systems are emerging as a key enabling technology, helping enterprises optimize picking efficiency, reduce errors, and enhance overall operational control.

Driving Efficiency in Industrial Warehouse Picking

Traditional picking processes in manufacturing warehouses often rely on manual scanning, printed lists, or handheld terminals. These methods can lead to inefficiencies, higher labor dependency, and increased risk of picking errors.

Bluetooth LED tags introduce a visual-guided picking system, where LED indicators illuminate to direct operators to exact storage locations. When integrated with Warehouse Management Systems (WMS) or Manufacturing Execution Systems (MES), these tags provide real-time instructions for picking, sorting, and replenishment tasks.

This approach delivers several advantages:

- ☑ Faster picking speed in large warehouse environments
- ☑ Reduced reliance on manual training
- ☑ Lower error rates in high-volume operations
- ☑ Improved workflow standardization

For manufacturing plants and large distribution centers, this technology significantly enhances productivity and operational consistency.

Product Overview: Xminnov LED Tag Series for Industrial Warehousing

Xminnov Group offers a diversified LED tag portfolio designed specifically for industrial warehouses and manufacturing facilities:

1. LED Tag – High-Efficiency Picking Indicator

Designed for dense storage environments, this model features bright LED signals and stable Bluetooth communication for accurate item identification.

- ☑ Compact size: 53 × 35 × 14 mm
- ☑ Lightweight (~16.2 g)
- ☑ Battery life: up to 14 months (CR2450)
- ☑ Communication range: up to 20 meters
- ☑ AES-encrypted secure communication

Ideal for high-frequency picking zones in manufacturing warehouses.

2. LED Bluetooth Button Tag – Interactive Picking Control

This model introduces multi-color LED channels and interactive confirmation features.

- ☑ Multi-channel RGB lighting
- ☑ Communication range: 20–50 meters
- ☑ Button confirmation for task completion
- ☑ Dual CR2477 batteries
- ☑ IP54 protection

Suitable for complex workflows where multiple instructions must be executed simultaneously.

3. Bluetooth Guide Light – Multi-Color Visual Navigation

A durable guide light designed for long-term industrial deployment.

☑ Supports up to six LED colors

☑ Battery life: up to 24 months

☑ IP64-rated enclosure

☑ Suitable for harsh warehouse environments

Widely used in manufacturing storage areas, material staging zones, and internal logistics.

4. Bluetooth LED Buzzer Tag – Dual Alert System

Combining visual and audible signals for enhanced guidance.

☑ LED + buzzer alerts

☑ Configurable alert patterns

☑ Replaceable battery (CR2477)

☑ IP54 protection

Ideal for noisy factory environments or low-visibility areas.

Gateway for Smart Pick-to-Light Systems

A critical component of the Bluetooth LED tag ecosystem is the Gateway, which acts as the communication bridge between devices and backend systems.

Key Features of Gateway Devices

Based on Xminnov's hardware lineup (e.g., BG05, BG06, BGC5, BGH1 models), gateways provide:

☑ Stable Communication Hub

Supports Ethernet and Wi-Fi connectivity for reliable data transmission

☑ Flexible Deployment Options

o Ceiling-mounted fixed gateways (BG05, BG06)

o Handheld or mobile gateways (BGC5, BGH1)

o No installation required for portable devices

☑ Wide Communication Range

o BLE communication: up to 50–60 meters (environment dependent)

o 2.4G communication range: up to 30–60 meters

☑ Industrial Performance

o Multi-frequency support (BLE / 2.4G)

o High read rates (up to 300 tags/sec for handheld models)

o Long battery life for mobile devices

☑ Protocol Support

MQTT protocol ensures seamless integration with IoT platforms and WMS systems

These gateways ensure that LED tags receive real-time instructions and transmit operational data efficiently, forming the backbone of a scalable pick-to-light system.

Seamless Integration with Warehouse & Manufacturing Systems

Bluetooth LED tag systems can be fully integrated with:

☑ Warehouse Management Systems (WMS)

☑ Manufacturing Execution Systems (MES)

☑ Inventory control platforms

Through IoT connectivity, tasks are automatically assigned and synchronized across the system. When an order or production request is triggered, the corresponding LED tag lights up, guiding operators directly to the correct location.

This integration enables:

☑ Real-time task allocation

- ❑ Synchronized inventory tracking
- ❑ Improved production workflow coordination

Customization and Industrial IoT Capabilities

Xminnov Group provides one-stop IoT solutions tailored to industrial environments.

- ❑ 10,000 m² manufacturing facility
- ❑ 110,000 m² IoT industrial park under development
- ❑ Full in-house capabilities: R&D, prototyping, production, QC

The company supports customized solutions including:

- ❑ Hardware configuration
- ❑ Software integration
- ❑ System architecture design

This ensures that each deployment aligns with specific operational requirements in manufacturing and large warehouse settings.

Key Benefits for Manufacturing and Large Warehouses

Organizations adopting Bluetooth LED tag systems can achieve:

- ❑ Higher picking accuracy through visual guidance
- ❑ Reduced training time for warehouse staff
- ❑ Faster material handling and order processing
- ❑ Improved inventory visibility in production environments
- ❑ Scalable infrastructure for expanding operations
- ❑ Reliable performance in industrial conditions

These benefits make the technology particularly suitable for manufacturing plants, industrial warehouses, and large-scale storage facilities, rather than small retail environments.

Conclusion

As industrial automation continues to evolve, Bluetooth LED tag systems are becoming a core component of intelligent warehouse and manufacturing operations. By combining visual guidance, real-time connectivity, and scalable system architecture, these solutions significantly improve efficiency and operational control.

With advanced LED tag products and robust gateway solutions, Xminnov Group provides a comprehensive ecosystem for smart pick-to-light systems. Backed by over 16 years of industry experience and strong manufacturing capabilities, the company is well-positioned to support global clients in building smarter, more efficient industrial operations.

For more information, please visit: <https://www.rfidtagworld.com/>





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