ZigBee Lighting Control Box

SG200

User's Manual

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Chapter 1   Introduction

The SG200 is an indoor smart lighting solution designed to deploy at commercial offices, warehouses and factories for remote lighting controls. When SG200 is connected to a dimmable indoor LED driver, SG200 can perform dimming and control lighting on/off through a Billion's provided smart energy gateway. Base on Billion's API, the lighting system integrators can remotely control lighting either via BEsmart APP or integrate into their lighting software on PC, Smartphone or cloud-based to pair with Billion's SG200 and smart meters. The smart lighting control box is a ZigBee wireless corresponding solution that can reduce the extra wiring and installation costs.

The SG200 supports a universal range of AC input (AC 100~277V), which can correspond to worldwide power environments. The SG200 also supports power on/off control feature, supporting up to maximum 800VA (N.C) load. SG200 is also embedded with a built-in four channels of dimming function supporting DC 0~10V dimming output. SG200 utilizes DI (Digital Input) and DO (Digital Output) to provide additional applications for a lighting system. The DI can connect to motion sensors or lighting sensors, and can interact with the sensors via the DO port. DO can trigger other pre-defined sensors, such as like alarm sensor, to enable instant alerting.

Flexible API Supports Extensive Application Developments

Billion Smart Energy Gateway (SG6200NXL or SG600 R2) are integrated with scalable IP-based API. Through the received API, the smart energy gateway can control SG200 automatically, allowing system integrators to develop their backend software system on Billion's hardware platform.

Digital Input and Digital Output Proving Value-Added Automation

The DI/DO feature of SG200 is flexible for providing a variety of applications to meet the customer needs. For example, if a warehouse is empty, the lights in this warehouse should be off to save energy. In this application, the SG200's DI can connect to a motion sensor detecting human activities. SG200 then can automatically turn the lights on/off based on the environmental variables. To enhance security, SG200's DO can connect to a buzzer, and when the motion sensors detect human activities outside of the operational hours, SG200 can trigger the buzzer to deliver instant alarms. By providing reliable SG200's DI/DO, the customer can easily integrate this state-of-art device to create a broad range of value-added applications.

Convenient Setup and Easy Installation

SG200 ZigBee Lighting Control Box is a compact device embedded with AC and dimming terminals. The device is easy for installers to providing wiring and setup services. The only

thing that needs to be done is to plug-in an AC power cable and a lighting power cable to the quick install terminals of SG200. SG200 will support automatic allocation with Billion Smart Energy Gateway when triggering the pairing function on the smart gateway. The LED indicator on the front panel is for the customer to understand the communication and the relay status.

WARNING

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

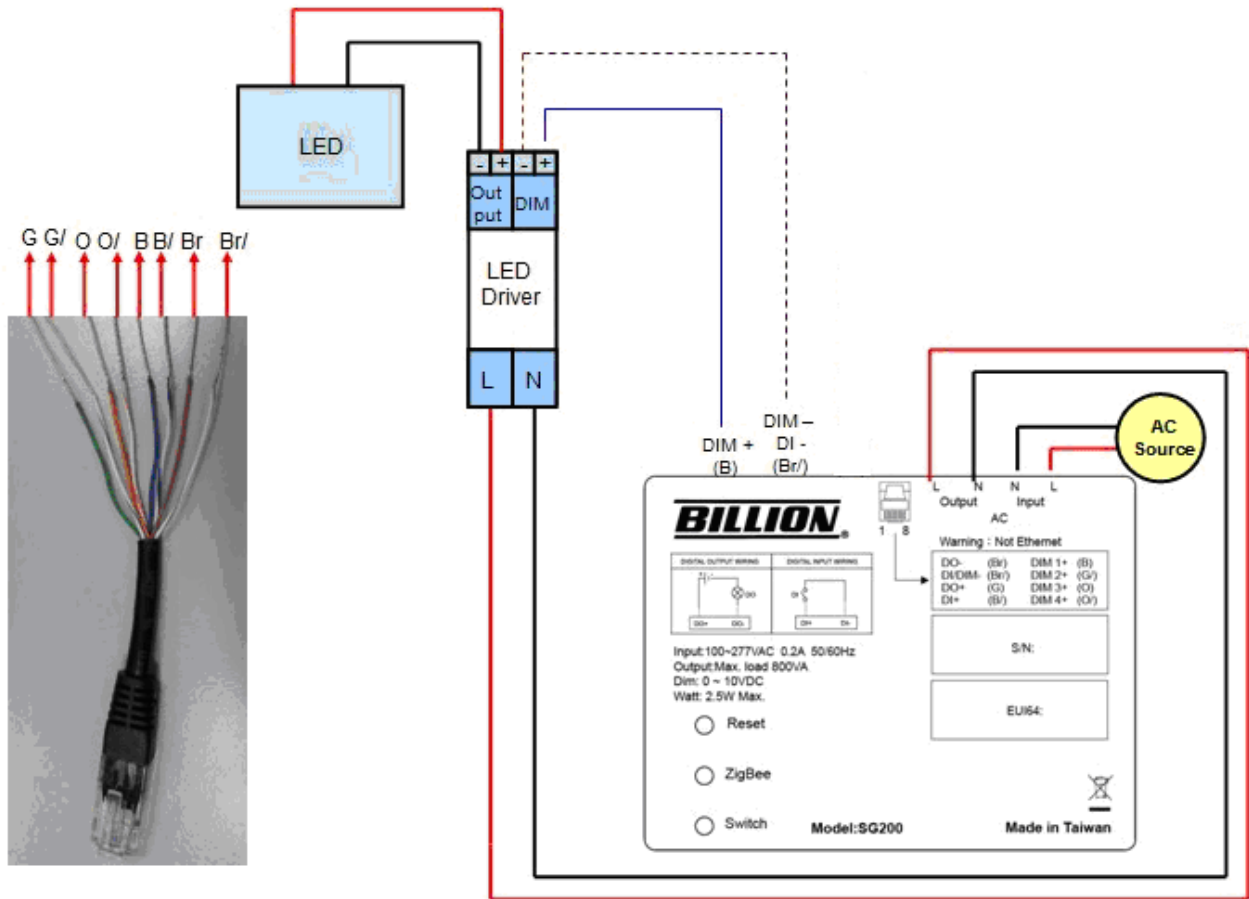This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference
(2) This device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. . This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Contains TX FCC ID:QI3BIL-MD1000

Wiring and LED description

SG200 Definition

| Number	Definition
1	AC input
2	AC output, it connect to AC load
3	Digital output (-),
4	Dimming (-) and Digital input (-)
5	Digital output(+)
6	Digital input(+)
7	Dimming 1(+)
8	Dimming 2(+)
9	Dimming 3(+)
10	Dimming 4(+)
11	Reset to default setting when press button 5 seconds
12	LED on: SG200 not join ZigBee network LED blink: SG200 joined ZigBee network.
13	LED on: Relay on. LED off: Relay off.

Wiring example

1-1. ZigBee join and leave

Just press ZigBee button of SG6200NXL gateway when SG200 is not yet join ZigBee network, then SG200 will automatically join ZigBee Network with SG6200NXLGateway.

1.2.1 Join

a. Plug in ZigBee SG200 AC power
b. Check ZigBee LED status of SG200, If ZigBee LED is on then next step
c. Press ZigBee button of SG6200NXLgateway
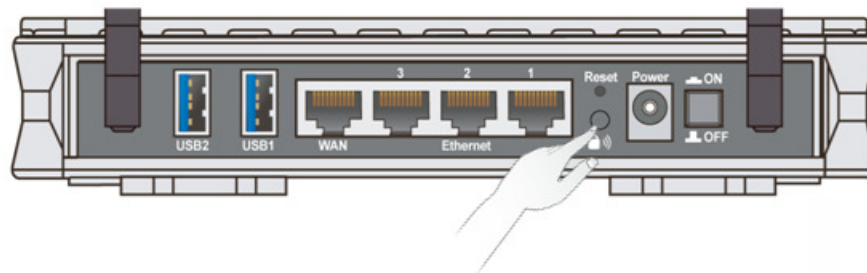
d. ZigBee LED will fast flash about 60 seconds
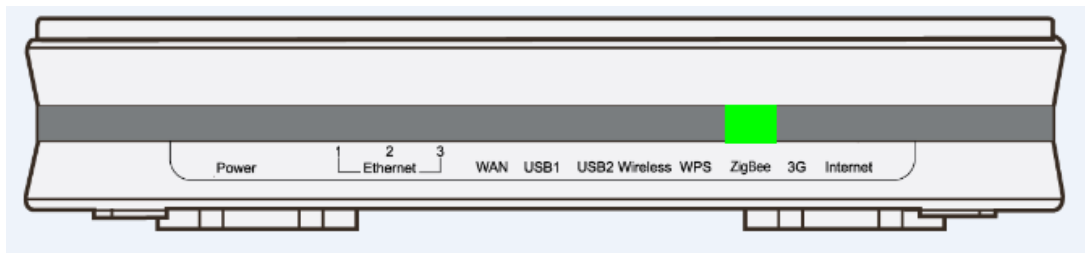
e. The ZigBee LED of SG200 will solid blink after joined ZigBee network

1.2.2 Leave

Method 1：

1. The SG200 power on again
2. Press Reset button until ZigBee LED fast flash then release Reset button
3. The SG200 has been leaved ZigBee network when ZigBee LED back to solid on state.

Method 2：

To click "Remove" button in Web GUI of SG6200NZL to remove SG200 from ZigBee network

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Power Management

▾ Meter Config

Parameters							
Allow Join	Start						
Scan Meter	Scan						
PLC IP Range	0.0.0.0	~0.0.0.0					

Meter List	Model Name	Appliance	Display Order	CT Ratio	Identify	Remove
0004ED010000004F	SG200	N/A	▼	1	Identify	Remove
0004ED010000006D	SG200	N/A	▼	1	Identify	Remove

Apply   Cancel

Chapter 2   Specification

Network Protocols and Features

Fully IEEE 802.15.4 and ZigBee PRO compliant

RF: ZigBee 2.4GHz IEEE 802.15.4

Compliant with ZigBee HAN (Home Automation Profile)

Provides API for vendors to develop their App and cloud service

Physical Interface

4 channel of DC 0~10V max. 4mA dimming output

1 x Relay switching load: 800VA (N.C)

Load inrush current <= 64A

Digital Input x 1, source type 12VDC 12mA

Digital Output x 1, sink type 5~24VDC max.1A

Antenna: External Antenna

Dimensions: 3.54" x 2.76" x 1.81" (90mm x 70mm x 30mm)

Power Requirements

Input : 100~277VAC 50/60Hz

RF Specifications

ZigBee 2.4GHz(2405~2480MHz) IEEE 802.15.4-2003

Output power < 8dBm

Operating Environment

Operating temperature: $0°C$ – $60°C$

Storage temperature: $-20°C$ – $70°C$

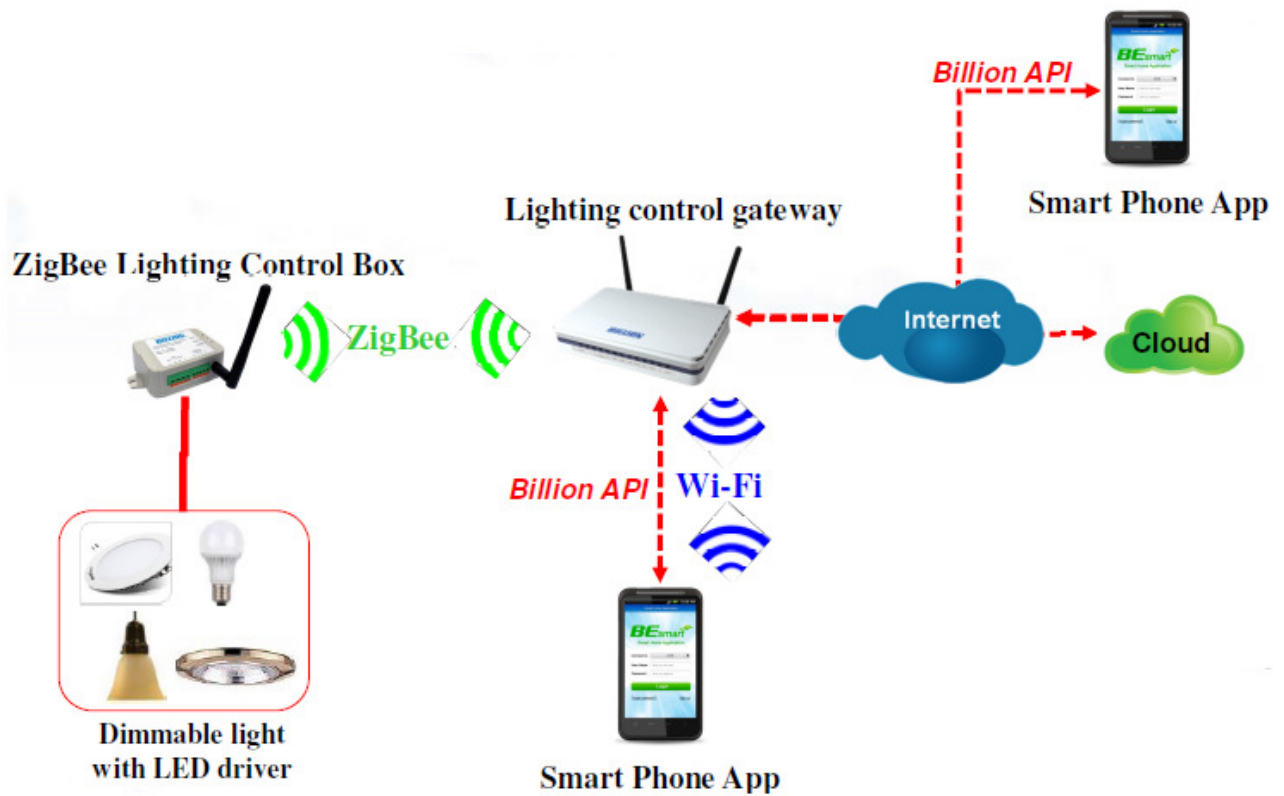Humidity: 20% – 95% non-condensing

Application Scenarios – SG200's Interactive Dimming with Motion Sensors

PIR motion sensors can be integrated in SG200's DI to provide automatic dimming for a more energy-saving lighting management.
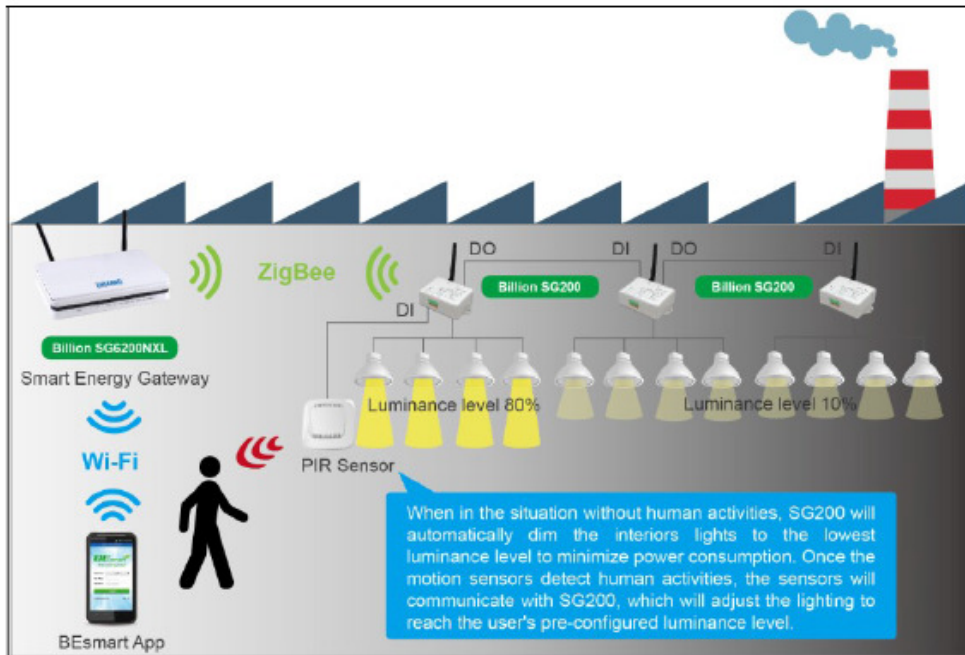
SG200's DI /DO enhance the security management when integrating both motion sensors and security buzzers & alarms
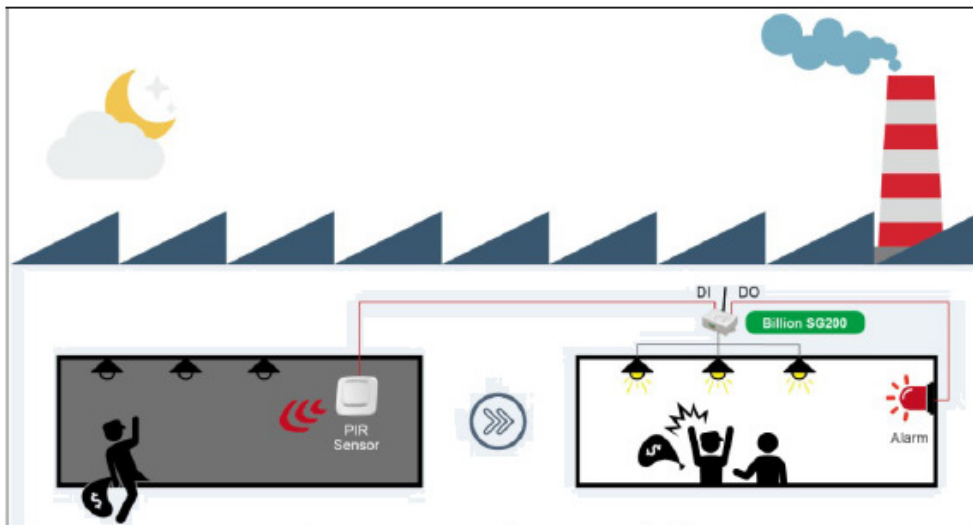
Manufacturer: Billion Electric Co., Ltd.

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