

Groups(0x0004)	
Scenes(0x0005)	
On/Off(0x0006)	
Optional	
Power Configuration(0x0001) (LS-1A-B only)	None

• Attribute of Basic Cluster Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	ZCLVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x01	M
0x0001	ApplicationVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x00	O
0x0003	HWVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0	O
0x0004	ManufacturerName	Character String	0 – 32 bytes	Read only	Climax Technology	O
0x0005	ModelIdentifier	Character String	0 – 32 bytes	Read only	(Model Version)	O
0x0006	DateCode	Character String	0 – 16 bytes	Read only		O
0x0007	PowerSource	8-bit	0x00 – 0xff	Read only		M
0x0010	LocationDescription	Character String	0 – 32 bytes	Read / Write		O
0x0011	PhysicalEnvironment	8-bit	0x00 – 0xff	Read / Write	0x00	O
0x0012	DeviceEnabled	Boolean	0x00 – 0x01	Read / Write	0x01	M

• Attribute of Identify Cluster Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	IdentifyTime	Unsigned 16-bit integer	0x00 – 0xffff	Read / Write	0x0000	M

• Attributes of the Groups cluster Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	NameSupport	8-bit bitmap	x00000000	Read only	-	M

• Attributes of the Scenes cluster Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	NameSupport	8-bit bitmap	x00000000	Read only	0x00	M
0x0001	CurrentScene	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x00	M
0x0002	CurrentGroup	Unsigned 16-bit integer	0x0000 – 0xffff	Read only	0x00	M
0x0003	SceneValid	Boolean	0x00 – 0x01	Read only	0x00	M
0x0004	NameSupport	8-bit bitmap	x00000000	Read only	-	M

• Attribute of On/Off Cluster Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	On/Off	Boolean	0x00 – 0x01	Read only	0x00	M

• Attribute of Power Configuration Cluster Information (LS-1A-B only)

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0035	BatteryAlarmMask	Bitmap	0	Read / Write	0	O

ZigBee 3-Way Light Switch: LS-1A/E-3W-ZBS(R)

Introduction

LS-1(A/E)-3W-ZBS(R) is a ZigBee Light Switch package to include a Master ZigBee Light Switch (LS-1A-G-ZBS(R), LS-1E-G-ZBS(R) or LS-1A-B-ZBS) and a Slave (Auxiliary) Light Switch (LS-1A-S or LS-1E-S). The Light Switch package is designed to be used in new installations or replace existing 3-way light switch to achieve home automation. After joining ZigBee network, the Light Switch package can be controlled via ZigBee network to activate remotely turn on/off household lighting.

The Master Light Switch utilizes ZigBee technology for wireless signal transmission. ZigBee is a wireless communication protocol that is reliable, has low power consumption and has high transmission efficiency. Based on the IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and coordinated for data exchange and signal transmission.

The Master Light Switch can also be bound to a ZigBee Controller to toggle On/Off the connected lighting.

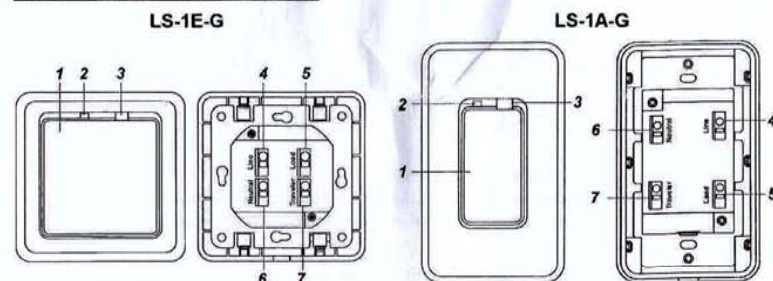
Models with router function (LS-1A-G-ZBSR and LS-1E-G-ZBSR) also serve as a router in the ZigBee network. After being included in the ZigBee network, it allows other ZigBee device to join the network through the Light Switch.

Caution

The devices are intended for installation in accordance with the local wiring regulations such as the National Electric Code in the United States, the Canadian Electrical Code, or CSA C22.1, etc.. If you are unsure or uncomfortable about installing this device, please consult a qualified electrician in your area.

Parts Identification

Master Light Switch: LS-1A/E-G



1. Function Button

- Pressing the button to toggle on/off the switch.
- Press and hold the button for 10 seconds then release to reset the Light Switch.
- Press and hold the button for 3 seconds then release to bind with a controller

2. LED indicator

The LED indicator is used to indicate Light Switch status:

- On:
The Light Switch is turned off.
- Off:
The Light Switch is turned on.
- Flashes twice:
The Light Switch has successfully joined a ZigBee network.
- Flashes five times
The Light Switch has successfully bound with a controller
- Flashes every 20 minutes
The Light Switch has lost connection to its current ZigBee network (LS-1A-G-ZBS / LS-1E-G-ZBS only)
- Flashing continuously

The Light Switch is overheated.

3. Air Gap Switch

- Pulled out:
Completely removes the power available to the load. This enables the connected lighting (bulb, tube, etc.) that is controlled by the light switch to be changed with minimal danger of electrical shock.
Use a flat-head screwdriver to pull the switch out.
- Pushed in:
For normal operation of the light switch.

Connection Terminals

Insert a flat-head screwdriver to open the clipper for each terminal and connect wiring. Remove the screwdriver to close the clipper and hold wire in place.

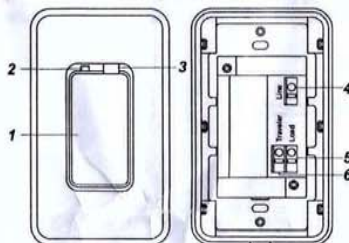
4. Line Terminal

5. Load Terminal

6. Neutral Terminal

7. Travel Terminal

Master Light Switch: LS-1A-B (Rechargeable Battery)



1. Function Button

- Pressing the button to toggle on/off the switch.
- Press and hold the button for 10 seconds then release to reset the Light Switch.
- Press and hold the button for 3 seconds then release to bind with a controller

2. LED indicator

The LED indicator is used to indicate Light Switch status:

- On:
The Light Switch is turned off.
- Off:
The Light Switch is turned on.
- Flashes twice:
The Light Switch has successfully joined a ZigBee network.
- Flashes five times
The Light Switch has successfully bound with a controller
- Flashes every 20 minutes
The Light Switch has lost connection to its current ZigBee network (LS-1A-B-ZBS only)

3. Air Gap Switch

- Pulled out:
Completely removes the power available to the load and charges the rechargeable battery of the Light Switch. This enables the connected lighting (bulb, tube, etc.) that is controlled by the light switch to be changed with minimal danger of electrical shock.
For the first time installation of LS-1A-B Light Switch, Air Gap Switch must be **pulled out** to charge the rechargeable battery of the Light Switch.
Use a flat-head screwdriver to pull the switch out.
- Pushed in:

● ZigBee Router Device Capacity (Master Light Switch only: LS-1A-G-ZBSR / LS-1E-G-ZBSR Only)

The Light Switch models with Router function (LS-1A-G-ZBSR / LS-1E-G-ZBSR) allow other ZigBee devices to join the ZigBee Network through the Router. The Light Switch Router has a maximum capacity of 40 devices/routers.

Features

● Power Supply

LS-1A/E-G: The Light Switch is powered by the AC connections.

LS-1A-B: The Light Switch uses a rechargeable battery pack as its main power source.

When the Light Switch is turned on, the Light Switch is powered by the rechargeable battery pack.

Whenever the Light Switch is turned off or when the Air Gap Switch is pulled out, AC connection will start charging the battery pack. For the initial setup of LS-1A-B, please pull the Air Gap Switch out (using a flat-head screwdriver) and charge its rechargeable battery for at least 30 minutes. Please make sure Line, Load and the light bulb (or tube) are fully connected to ensure the battery is being charged.

● Low Battery Detection (LS-1A-B only)

When the Light Switch is low on battery, it will transmit low battery signal along with the supervision signal to the ZigBee network coordinator or control panel to warn the user(s).

● Supervision

The Light Switch will transmit a supervision signal to report its condition regularly every 30 minutes. The user can also press the Function Button once to transmit a supervision signal manually.

Operation

● Light Switch Control

- After the Master Light Switch has successfully joined a ZigBee network, the coordinator/control panel can remotely control the Light Switch to toggle the connected lighting between On and Off. Please refer to your ZigBee coordinator/control panel for detail.
- You can also press the button on the Light Switch to toggle on/off the connected lighting.
- If you have bound a controller with the Light Switch, you can also use the controller to turn on/off the connected lighting.
- If there is a power shortage (e.g. wiring disconnected), its previous on/off status will be restored within 1 minute after the power is restored.

● Maximum Operation Load

- The Master Light Switch has a maximum capacity of 5A.
- If the LS-1A-G-ZBS or LS-1E-G-ZBS Light Switch is overheated, the circuit will cut off automatically as the connected lighting will turn off. The LED will start to flash.
During the overheated period, users cannot switch the light on (whether controlled by the ZigBee coordinator, controller or pressing the function button).
The LED will stop flashing when the Light Switch returns to normal operation condition. The Light Switch can then be turned on again.
- A fuse is installed in the LS-1A-B-ZBS Light Switch to protect from the harmful effects of over-currents. The fuse will blow if the connection causes an over-current.

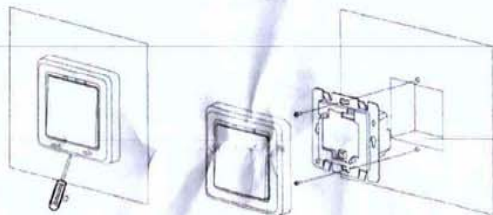
Appendix (For developers only)

Light Switch Cluster ID

Device ID: Mains Power Outlet :0x0009	
Endpoint:0x0A	
Server Side	Client Side
Mandatory	
Basic (0x0000)	None
Identify(0x0003)	

LS-1A Dismounting

1. Insert a flat-head screwdriver to the caved in area of the Switch Cover and carefully lift the Switch Cover.
2. Slide the Switch Cover downwardly from the Base to remove the Switch Cover completely.
3. Loosen the top and bottom screws using a Phillips screwdriver and remove the Light Switch Base.



ZigBee Network Setup (LS-1A/E-G and LS-1A-B models only)

● **ZigBee Device Guideline**

ZigBee is a wireless communication protocol that is reliable, has low power consumption and has high transmission efficiency. Based on the IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and are coordinated for data exchange and signal transmission.

● **Joining the ZigBee Network**

As a ZigBee device, the Master Light Switch needs to join a ZigBee network to receive commands. Please follow the steps below to join the Light Switch into a ZigBee network.

1. Connect power to the Light Switch according to Installation instruction above.
2. Press and hold the function button for 10 seconds as the Light Switch resets and starts searching for existing ZigBee network. Please make sure the permit-to-join feature on the router or coordinator of your ZigBee network is enabled.
3. If the Light Switch successfully joins a ZigBee network, the LED Indicator will flash twice.
4. After joining the ZigBee network, the Light Switch will be registered in the network automatically. Please check the ZigBee network coordinator, system control panel or CIE (Control and Indicating Equipment) to confirm if joining and registration is successful.
5. After joining the ZigBee network, if the Light Switch loses connection to the current ZigBee network, the LED indicator will flash every 20 minutes. Please check your ZigBee network condition and Light Switch signal range to correct the condition.

● **Binding with Controller**

After joining the ZigBee network, the Master Light Switch can bind itself with a controller device which can be used to toggle on/off the connected lighting. To bind the Light Switch and the device:

1. Press and hold the Function Button for 3 seconds, then release the button. The Light Switch will send binding request to the coordinator.
2. Refer to your controller manual to send binding request for the device within 16 seconds.
3. If binding is successful, the Light Switch LED indicator will flash 5 times to confirm. You can now use the controller to toggle on/off the connected lighting.

● **Removing Device from ZigBee Network (Factory Reset)**

To remove the Light Switch from current ZigBee network, the device must be put to Factory Reset to complete device removal. Factory Reset function will clear the Light Switch of its stored setting information and prompt the device to search for new ZigBee network.

Before removing device, make sure the Light Switch is within current ZigBee network signal range

1. Press and hold the function button for 10 seconds, then release the button to reset Light Switch.
2. Upon reset, the Light Switch will clear current ZigBee network setting and transmit signal to ZigBee coordinator to remove itself from current ZigBee network. It will then actively search for available ZigBee network again and join the network automatically.

For normal operation of the light switch.

Connection Terminals

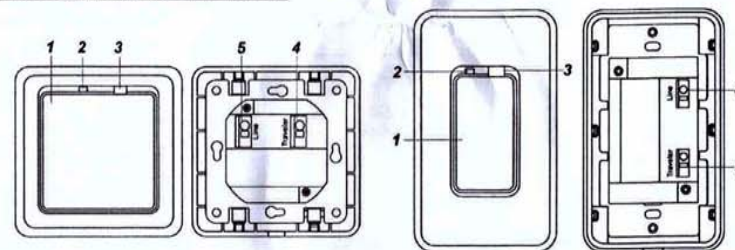
Insert a flat-head screwdriver to open the clipper for each terminal and connect wiring. Remove the screwdriver to close the clipper and hold wire in place.

4. Line Terminal

5. Load Terminal

6. Travel Terminal

Slave Light Switch: LS-1A/E-S



1. Switch Button

- Pressing the button to toggle on/off the connected lighting.

2. LED Indicator

The LED indicator is used to indicate Light Switch status:

- On:
The Light Switch is turned off.
- Off:
The Light Switch is turned on.

3. Air Gap Switch

- Pulled out:
Completely removes the power available to the load. This enables the connected lighting (bulb, tube, etc.) that is controlled by the light switch to be changed with minimal danger of electrical shock.
Use a flat-head screwdriver to pull the switch out.
- Pushed in:
For normal operation of the light switch.

Connection Terminals

Insert a minus screwdriver to open the clipper for each terminal and connect wiring. Remove the screwdriver to close the clipper and hold wire in place.

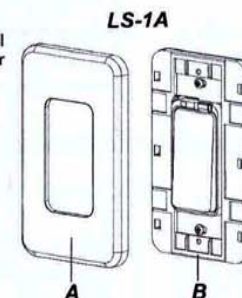
4. Line Terminal

5. Travel Terminal

Front Cover

A. Switch Cover

B. Light Switch Base



Installation

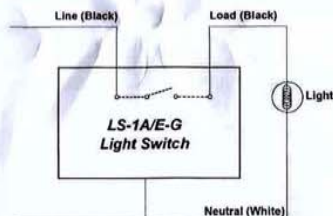
● **Wiring**

The insertion holes' wiring specification is AWG 14-24 or Ø 2.08-0.205 (mm²).

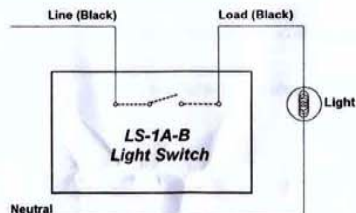
- Please make sure the main power is switched off (to prevent electrical shock). It is also recommended that you have an electrical tester to test whether the wires are hot or not.
- If applicable, remove the previously installed Light Switch first.
- Follow the schematics below to wire the Light Switch according to the desired installation.
- To connect the wires, insert a flat-head screwdriver to open the clipper for each terminal and connect wiring. Remove the screwdriver to close the clipper and hold wire in place.

Please note that the wiring color below are for references only, consult an electrician if you have trouble identifying the terminals of the desired wiring circuit or if you do not feel confident to convert the circuit.

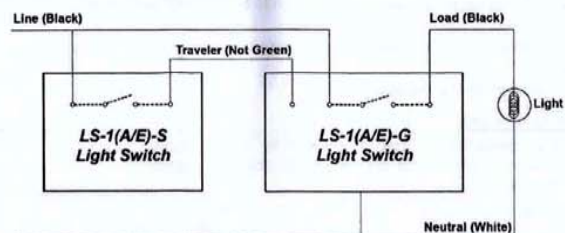
Single Switch Wiring (One Switch, One Load) using LS-1A/E-G



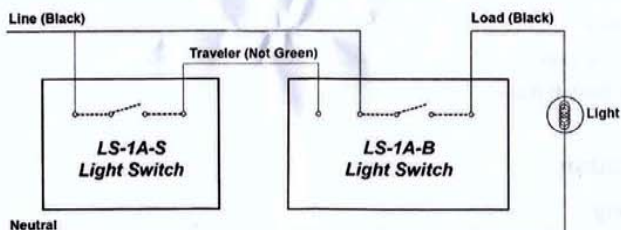
Single Switch Wiring (One Switch, One Load) using LS-1A-B



3-Way Wiring (Two Switches, One Load) using LS-1A-G and LS-1A-S or LS-1E-G and LS-1E-S



3-Way Wiring (Two Switches, One Load) using LS-1A-B and LS-1A-S



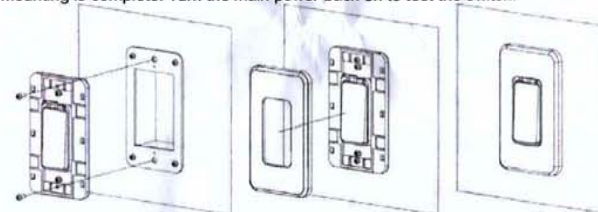
● Mounting

After connecting the wires, follow the steps below to mount the Light Switch on the wall. Usually, the wires are freely exposed (before connected) inside the hole of the wall. For some configurations, there is a box inside where the wires can be placed.

The wall or box may also have one top screw hole and one bottom screw hole.

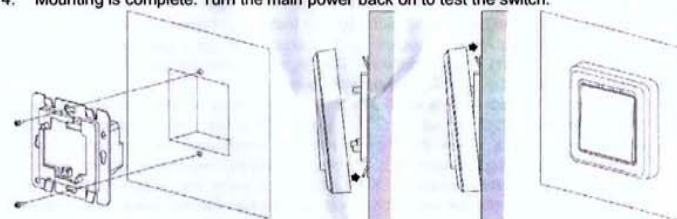
LS-1A Mounting

1. Insert the Light Switch Base into the hole (or box) in the wall and tighten the top and bottom screws using a Phillips screwdriver as shown in diagram 1.
2. Push the Switch Cover onto the Light Switch as shown in diagram 2. If the Switch Cover is stabilized onto the switch, you should hear a Click sound.
3. Mounting is complete. Turn the main power back on to test the switch.



LS-1E Mounting

1. Insert the Light Switch Base into the hole (or box) in the wall and tighten the top and bottom screws using a Phillips screwdriver.
2. Slide the Switch Cover from the bottom towards the Base to stabilize the Light Switch.
3. Push the Switch Cover onto the Light Switch Base. If the Switch Cover is stabilized onto the switch, you should hear a Click sound.
4. Mounting is complete. Turn the main power back on to test the switch.



● Dismounting

Follow the steps below to dismount the Light Switch:

Please make sure the main power is switched off.

LS-1A Dismounting

1. Insert a flat-head screwdriver to one corner of the Switch Cover and lift the Switch Cover.
2. Insert a flat-head screwdriver to another corner of the Switch Cover and lift the Switch Cover.
3. Lift the Switch Cover gently from the lifted side.
4. Lift the Switch Cover completely.
5. Loosen the top and bottom screws using a Phillips screwdriver and remove the Light Switch Base.

