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SIMARINE®



Light Switch

USER MANUAL

V1.0

USER MANUAL - V 1.0

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1. Introduction

Simarine's Light Switch.

Is a Multifunctional 12V DC double switch with integrated dimmers.

The Multifunctional switch can be used in all 12V DC installations for LED lights and other devices using 12V DC with a maximum current load of 5A. It includes two independent buttons with the DC dimming functionality for 12V LEDs.

The power source is common for both buttons. Each button independently controls one channel.

Width modulation with 400Hz and 12V pulse is implemented for LED dimming. Simarine's SICOM allows the switch to be used in multiple ways, controlling one or more lights from different locations.

Each switch has two 16 position rotary switches.

2. Safety

Only qualified electricians with proper safety equipment should make installation of Simarine electronics. When working with batteries, you should wear protective clothing and eye protection.

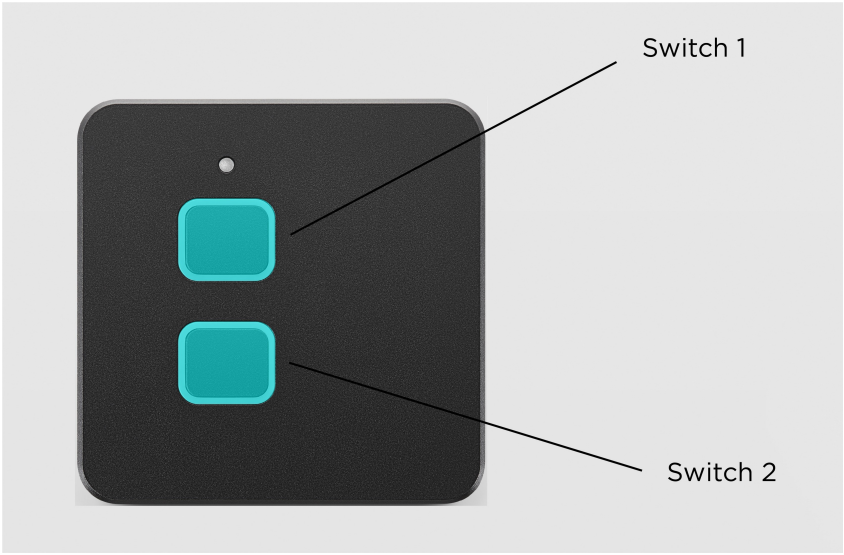
CAUTION: Do NOT connect anything to a damaged battery. It could heat up, catch fire, or explode.

3. Overview

The Light Swtich comes in two different colors. Black and silver.



4. About



Short press of the switch 1 or switch 2 - ON/OFF
Long press of the switch 1 or switch 2 - Dimmer functionality

If you connect 2 channels parallelly, the current limit doubles (10A)
If you have two light switches, connected to the other via SiCOM cable, then the second switch doesn't need an additional power source (the second switch has the same address as the first switch)

5. Installation

5.1 Operation

The multifunctional switch can be connected in daisy chain to operate in multiway switching.

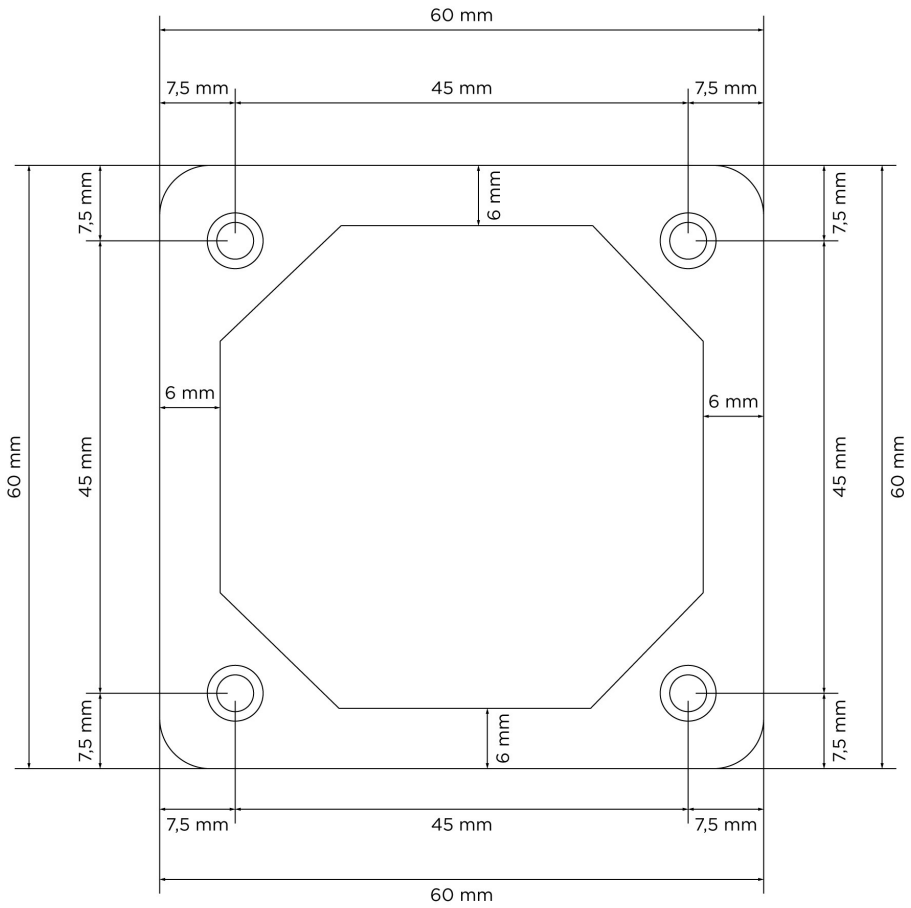
It can operate in three different modes:
- PWM mode (Pulse Width Modulation) dimming LED lights.
- ON/OFF mode switching 12V ON or 0V OFF on outputs.

Both buttons can simultaneously control both outputs (only in PWM and On/Off mode).

5.2 Mounting

CAUTION: Install the power unit in a clean and dry place protected from accidental spilling of liquids.

All measurements are in milimeters (mm).



5.3 Cables

CAUTION: Failure to observe the required cable cross-sections can damage the shunt, wiring, or cause a fire.

SiCOM data cable:

- For the SiCOM connection use the supplied cable.

Cable length C

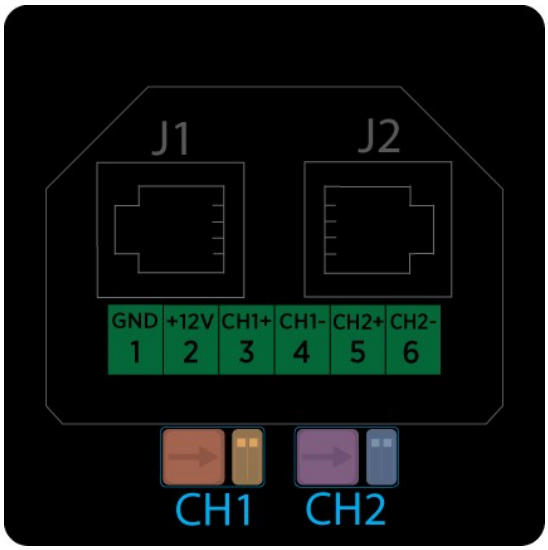
Cable length	Cable type
< 5m	No limitations
>= 5m	2x2x0.25 mm2 twisted pair (recommended)

5.4 Detailed view

J1 – female RJ9 connector - SiCOM communication
J2 – female RJ9 connector - SiCOM communication

CH1:
- SW3 – 16 position rotary switch – Switch Address (Orange) 10
- SW4 - two toggle DIP switch - control both outputs (Yellow) 12

CH2:
- SW5 – two toggle DIP switch – enable/disable write lights status to non-volatile memory (Blue) 13
- SW6 – 16 position rotary switch – Buttons Address (Purple) 11



1 - To DC power source negative terminal (GND)
2 - To DC power source positive terminal (+12V)
3 - Positive terminal to LED light (CH1+)
4 - Negative terminal to LED light (CH1-)
5 - Positive terminal to LED light (CH2+)
6 - Negative terminal to LED light (CH2-)

6. Multiway switching

SiCOM communication standard is implemented to enable the multiway switching. On each switch there are two RJ9 four pin female connectors.

Connect one switch with another, to communicate using SiCOM cable with RJ9 male connectors on both ends.

The implemented communications standard is RS485 physical layer standard. The maximum number of devices connected to the same bus is 32 and overall length of the SiCOM serial bus must not exceed 30 meters.

The proper addresses have to be set to enable communications between multifunctional switches. Each rotary switch has 16 positions labeled from 0 to F (hexadecimal number system).

6.1 Setting addresses

Two rotary switches SW3 and SW6 are on the multifunctional switch and have a total of 16 positions (1 to F – hex number system).

These switches are used to set up the unique address for the switch and buttons on the switch.

The button represents the smallest entity which has to be addressed in the multiway switching to operate properly. If the
button on one multifunctional switch has the same address as the second switch then both are configured in
multiway switching. To use three or more switches in multiway switching on all switches, you have to be set the same
address for one button.

Rotary switch SW3 is used to address the multifunction switch itself. Rotary switch SW6 is used to address
buttons on the multifunctional switch.

Factory default for SW3 is position 0 and for SW6 is position 1.

6.2 Rotary switch SW3

To enable communication between two or more multifunctional switches all SW3 rotary switches have to be set
to the same position.

SW3 determines the high part of the button address.

The high part is the same for the complete switch. Lower part of the button address is determined with SW6.
If two or more switches have to work in the multiway switching, then all of them must have the same high part
address – SW3 must be set to the same position.

Example: SW3 rotary switch is set to position "2" on the multifunctional switch



6.3 Rotary switch SW6

SW6 rotary switch sets the address for buttons. One position on SW6 switch defines address for button 1 and button 2.

Example: SW6 rotary switch is set to position "8" – defines addresses for both buttons



Each button can be set to work in multiway switching or not. This is established with proper position on SW6.

6.3.1 Table SW6 address positions

The button 1 and button 2 addresses are defined with the position of SW6 rotary switch. It is important to know
which position defines what address.

This table, contains the list of SW6 positions and associated addresses for the Button 1 and the Button 2 on the multifunctional switch.

SW6 position	Button 1 address	Button 2 address
0	C	3
1	C	2
2	C	1
3	C	0
4	8	3
5	8	2
6	8	1
7	8	0
8	4	3
9	4	2
A	4	1
B	4	0
C	0	3
D	0	2
E	0	1
F	0	0

The complete address for each button is a combination of SW3 address and SW6 address from the table above.
When the SW6 rotary switch is in the “F” position, button 1 and button2 have the same address. In this case the communication is not possible or makes no sense while the received message can’t be assigned to the proper button.

7. Simultaneously Control Both Outputs

Note: Factory default is this option is disabled.

The multifunctional switch can be set to simultaneously control two outputs with both buttons. This is possible
only in the PWM and ON/OFF mode.

When one button is pressed, both outputs are ON or OFF or when one button is continuously pressed, the dimming starts on both outputs.

SW4 DIP switch is used to enable both buttons to simultaneously control both outputs.

Example: SW4 toggle switches are set to ON - buttons control all outputs. Default in this option is OFF



SW4 toggle switches positions to enable controlling both outputs with both buttons simultaneously.

Logical state	ON	
ON position	X	X
OFF position		
Contact number	1	2

8. Saving light status

Factory default in this option is disabled.

The multifunctional switch can be enabled to save states of outputs (ON/OFF, dimming index) in non-volatile
memory.

This option can be enabled with SW5. The status of the switch is saved 6 seconds after any changes on outputs.

SW5 toggle switches positions enable saving the state of lights.



Logical state	ON	
ON position	X	X
OFF position		
Contact number	1	2

9. Setup modes of operation

Factory default mode is the PWM mode.

To select ON/OFF or Push Button mode, the switch has to be setup. The best time to change the mode is right before the installation

When one or both buttons are in setup mode the RGB colour LED around the button will flash. Each mode
flashes in its own colour:

Flashing colour around the button	Mode
Magenta	PWM mode
Yellow	ON/OFF mode
Green	Push button mode
Blue	OK, Save successful
Red	Error when saving the setting

9.1 Setup procedure

The setup procedure is as follows:

1. Before entering the setup mode, the multifunctional switch has to be disconnected, or the power source must
be turned OFF.
2. To enter the setup, the button (or both simultaneously) must be pressed before the power is turned ON.
3. While pressing the button, turn the power source ON. After the power is ON, hold the button for 3 seconds.
   After 3 seconds have passed, the light around the button will start to flash in the colour associated to the mode (Magenta – factory default). The button is in setup mode.
4. Pressing and releasing the button will change the setup mode. Modes are changed in round-robin fashion
(PWM → ON/OFF → Push button → back to PWM and so on in a circle).
5. When the proper mode is selected, it has to be saved to be activated. Saving new settings is done with
pressing the button for at least 3 seconds. The setting will be saved in the flash memory and the light around the button will flash 4 times
in the blue colour if saving was OK. If any error occurs during saving, the light will flash in the red colour.

Note: If both buttons were pressed to enter setup mode, then both have to be pressed to save new settings
otherwise the time out will occur and the new settings will not be saved. In this case both settings are
saved.

If saving was successful the blue light will flash four times. This indicates that the switch is ready to work in the new mode.
The new saved setting is now saved in non-volatile memory. The button will stay in this mode until it is changed again in setup mode
and will not lose settings when the power is off.

10. Technical specifications

LIGHT SWITCH	
Operating	
Voltage range	8 - 16 V DC
Outputs	2
Maximum load (Amps per output)	5A
Power consumption	
Power OFF	1mA
Power ON, no load on outputs	3mA to 20mA. Depends on the environment light. Over the day RGB LEDS are shining brighter than in the night.
PWM - Pulse Width Modulation (Default)	12V, 400Hz
Connectivity	
SiCOM port	2
Dimensions	
NLS	60mm x 60mm x 42mm