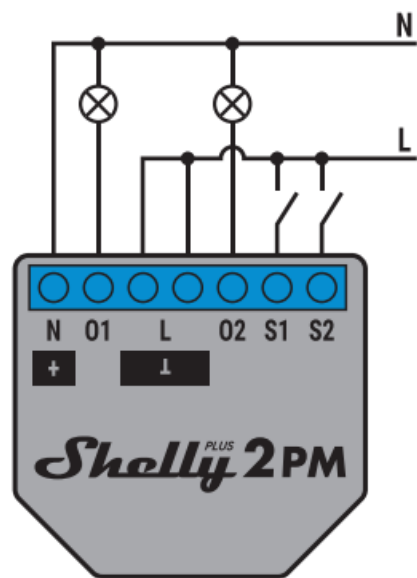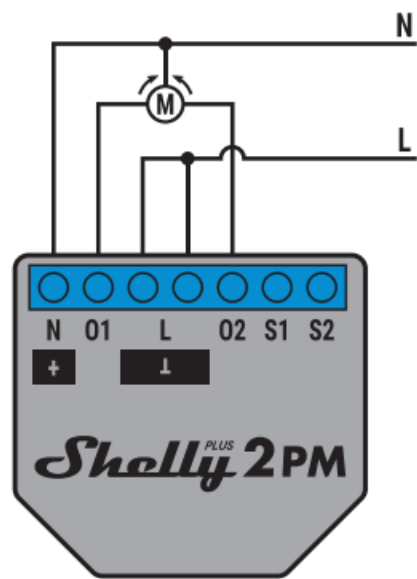# Shelly E504925 2 Circuit Wi-Fi Smart Switch User Guide

fig. 1

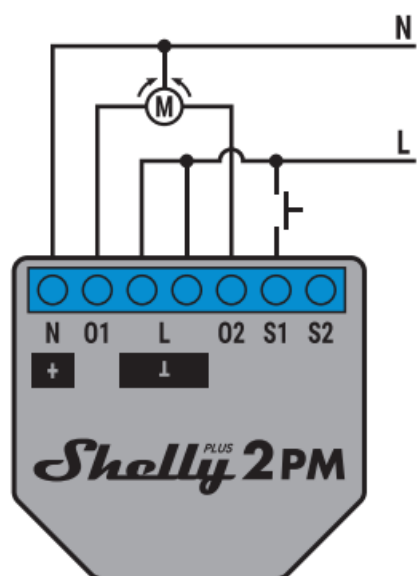fig. 2

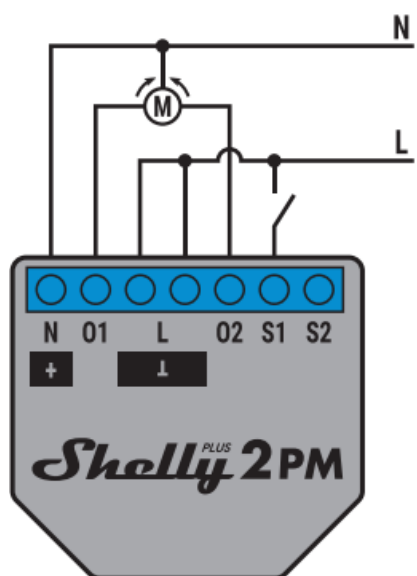fig. 3

fig. 4

fig. 5

N

L

N 01 L 02 S1 S2

+ ⊥

Shelly²ᴾᴸᵁˢ 2PM

fig. 6

N

L

N 01 L 02 S1 S2

+ ⊥

Shelly²ᴾᴸᵁˢ 2PM

fig. 7

N

L

N 01 L 02 S1 S2

+ ⊥

Shelly²ᴾᴸᵁˢ 2PM
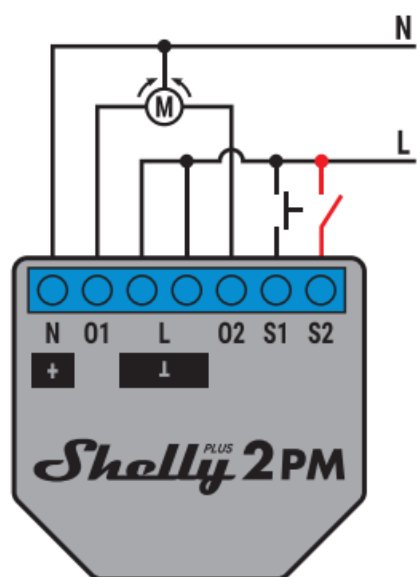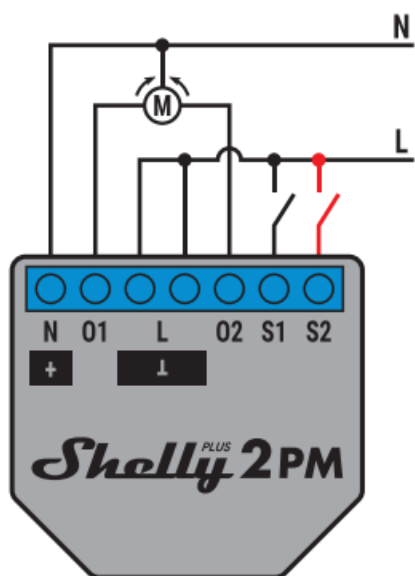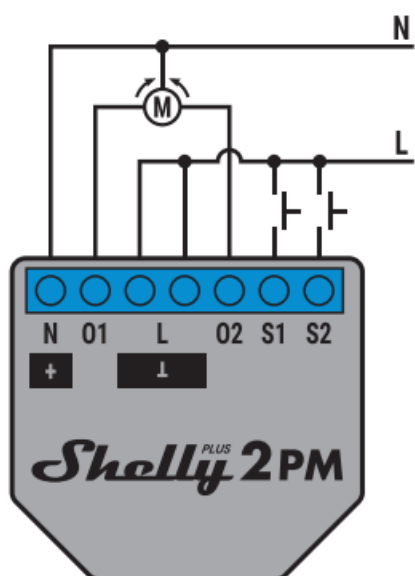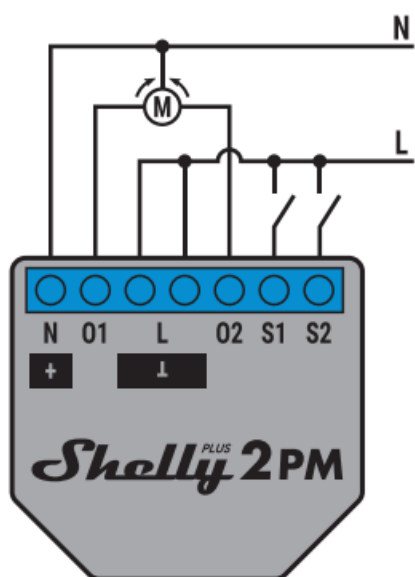
fig. 8

Contents

USER AND SAFETY GUIDE

2-circuit Wi-Fi smart switch with power measurement and cover control functionality

Shelly Plus 2PM

Read before use

This document contains important technical and safety information about the device, its safety use and installation.

⚠ **CAUTION!** Before beginning the installation, please read carefully and entirely this guide and any other documents accompanying the device. Failure to follow the installation procedures could lead to malfunction, danger to your health and life, violation of law or refusal of legal and/or commercial guarantee (if any). Shelly Europe Ltd. is not responsible for any loss or damage in case of incorrect installation or improper operation of this device due to failure of following the user and safety instructions in this guide.

Product Introduction

Shelly® is a line of innovative microprocessor-managed de-vices, which allow remote control of electric circuits through a mobile phone, tablet, PC, or home automation system. Shelly@ devices can work standalone in a local Wi-Fi network or they can also be operated through cloud home automation services. Shelly Cloud is a service that can be accessed using either an Android or iOS mobile application or with any inter-net browser at **https://control.shelly.cloud/**. Shelly® devices can be accessed, controlled, and monitored remotely from any place where the user has internet connectivity, as long as the devices are connected to a Wi-Fi router and the Internet. Shelly@ devices have an Embedded Web Interface accessible at **http://192.168.33.1** when connected directly to the device access point, or at the device IP address on the local Wi-Fi network. The embedded Web Interface can be used to monitor and control the device, as well as adjust its settings. Shelly® devices can communicate directly with other Wi-Fi devices through HTTP protocol. An API is provided by Shelly Europe Ltd. For more information, please visit: **https://shelly-api-docs.shelly.cloud/#shelly-family-overview**.
Shelly@ devices are delivered with factory-installed firmware. If firmware updates are necessary to keep the devices in conformity, including security updates, Shelly Europe Ltd. will provide the updates free of charge through the device Embedded Web Interface or the Shelly mobile application, where the information about the current firmware version is available. The choice to install or not the device firmware updates is the user's sole

responsibility. Shelly Europe Ltd. shall not be liable for any lack of conformity of the device caused by failure of the user to install the provided updates in a timely manner.

Schematic

See the schematics at the beginning of the user guide.

Legend

Device terminals:

- **O1:** Load circuit 1 output terminal
- **O2:** Load circuit 1 output terminal
- **S1:** Switch (controlling O1) input terminal
- **S2:** Switch (controlling O2) input terminal
- **N:** Neutral terminal
- **L:** Live (120 VAC) terminals

Wires:

- **N:** Neutral wire
- **L:** Live wire (120 VAC)

Installation Instructions

Shelly Plus 2PM (the Device) is a small form factor 2-channel smart switch which can control 2 electrical circuits, including a bi-directional AC motor. Each circuit can be loaded up to 8 A (16 A total for both circuits) and its power consumption can be measured individually.
It can be retrofitted into standard electrical wall boxes, be-hind power sockets and light switches or other places with limited space.

⚠️ **CAUTION!** Danger of electrocution. Mounting/installation of the Device to the power grid has to be performed with caution, by a qualified electrician.

⚠️ **CAUTION!** Danger of electrocution. Every change in the connections has to be done after ensuring there is no voltage present at the Device terminals.

⚠️ **CAUTION!** Use the Device only with a power grid and appliances which comply with all applicable regulations. A short circuit in the power grid or any appliance connected to the Device may damage it.

⚠️ **CAUTION!** Do not connect the Device to appliances exceeding the given max load!

⚠️ **CAUTION!** Connect the Device only in the way shown in these instructions. Any other method could cause damage and/or injury.

⚠️ **CAUTION!** Do not install the Device where it can get wet.

⚠️ **RECOMMENDATION:** Connect the Device using solid single-core cables with increased insulation heat resistance not less than PVC T105°C (221°F).

Before starting the mounting/installation of the Device, check that the breakers are turned off and there is no voltage on their terminals. This can be done with a phase tester or multimeter. When you are sure that there is no voltage, you can proceed to connecting the cables.

If you want to use the Device as a switch to control 2 load circuits, connect the Device as shown on **Fig. 1**. Connect both L terminals to the Live wire and the N terminal to the Neutral wire. Connect the first load circuits to the 01 terminal and the Neutral wire. Connect the second load circuits to the 02 terminal and the Neutral wire. Connect the first switch to the S1 terminal and the Live wire. Connect the second switch to the S2 terminal and the Live wire.

⚠️ **RECOMMENDATION:** For inductive appliances that cause voltage spikes during switching on/off, such as electrical motors, fans, vacuum cleaners and similar ones, RC snubber (0.1 μF / 100 Ω / 1/2 W / 600 VAC) should be connected parallel to the appliance. The RC snubber can be purchased at **https://www.shelly.com/en/products/shopfic-snubber**.

As a cover controller Shelly Plus 2PM can work in 3 modes: detached, single input or dual input.

In detached mode, the Device can be controlled through its Web Interface and the App only. Even if buttons or switches are connected to the Device, they will not be allowed to control the motor rotation in detached mode.

If you want to use the Device in detached mode connect the device as shown on **Fig. 2**: Connect both L terminals to the Live wire and the N terminal to the Neutral wire. Connect the common motor terminal/wire to the Neutral wire. Connect motor direction terminals/wires to the 01 and 02 terminals.* If you want to use the Device in single input mode connect the device as shown on **Fig. 3** for a button input or **Fig. 4** for a switch input. Connect both L terminals to the Live wire and the N terminal to the Neutral wire. Connect the common motor terminal/wire to the Neutral wire. Connect motor direction terminals/wires to the 01 and 02 terminals*.

Connect the button or the switch to the S1 or the S2 terminal and the Live wire.

If the input is configured as a button in the Device settings, each button press cycles open, stop, close, stop, etc. If the input is configured as a switch, each switch toggle cycles open, stop, close, stop, etc.

In single input mode Shelly Plus 2PM provides safety switch functionality. To utilize it, connect the device as shown on **Fig. 5** for a button input or **Fig. 6** for a switch input. Connect both L terminals to the Live wire and the N terminal to the Neutral wire. Connect the common motor terminal/wire to the Neutral wire. Connect motor direction terminals/wires to the 01 and 02 terminals*.

and the Live wire. Connect the safety switch to the S2 terminal and the Live wire.

The safety switch can be configured to:

– Stop the movement until the safety switch is disengaged or until a command is sent** and, if allowed in the Device settings, the movement is resumed in the opposite direction until the end position is reached.

– Stop and immediately reverse the movement until the end position is reached. This option requires reverse movement to be allowed in the Device settings.

The safety switch can also be configured to stop the movement in only one of the directions or in both.

If you want to use the Device in dual input mode, connect the Device as shown on **Fig. 7** for a button inputs or **Fig. 8** for a switch inputs. Connect both L terminals to the Live wire and the N terminal to the Neutral wire.

Connect the common motor terminal/wire to the Neutral wire. Connect motor direction terminals/wires to the O1 and O2 terminals*.

Connect the first button/switch to the S1 terminal and the Live wire. Connect the second button/switch to the S2 terminal and the Live wire.

In case the inputs are configured as buttons:

– Pressing a button when the cover is static, moves the cover in the corresponding direction until the endpoint is reached.

– Pressing the button for the same direction while the cover is moving, stops the cover.

– Pressing the button for the opposite direction, while the cover is moving, reverses the cover movement until the endpoint is reached.

In case the inputs are configured as switches:

– Turning a switch on moves the cover in the corresponding direction until an endpoint is reached.

– Turning the switch off stops the cover movement.

If both switches are turned on, the Device will respect the last engaged switch. Turning off the last engaged switch stops the cover movement, even if the other switch is still on.

To move the cover in the opposite direction, the other switch has to be turned off and on again.

Shelly Plus 2PM can detect obstacles. If an obstacle is present, the cover movement will be stopped and, if

configured so in the Device settings, reversed until the endpoint is reached. Obstacle detection can be enabled or disabled for only one of the directions or for both.

⚠️ **RECOMMENDATION:** To avoid voltage spikes during switching on/off the cover bi-directional motor, two RC snubbers (0.1 µF / 100 Ω / 1/2 W / 600 VAC) should be connected between the common and the two direction terminals/cables of the cover motor as shown below:

The RC snubber can be purchased at **https://www.shelly.com/en/products/shop/rc-snubber**.
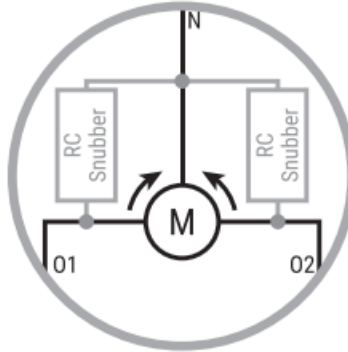
Initial Inclusion

If you choose to use the Device with the Shelly Smart Control mobile application and cloud service, instructions on how to connect the Device to the Cloud and control it through the Shelly Smart Control app can be found in the mobile application guide.
The Shelly mobile application and Shelly Cloud service are not conditions for the Device to function properly. This Device can be used standalone or with various other home automation platforms and protocols.

⚠️ **CAUTION!** Do not allow children to play with the buttons/switches connected to the Device. Keep the devices for re-mote control of Shelly (mobile phones, tablets, PCs) away from children.

Specification

- Purpose of control: Operating
- Construction of control: Independently mounted
- Mounting: Flush mounting
- Dimensions (HxWxD): 37x42x16 mm / 1.46×1.65×0.63 in
- Screw terminals max torque: 0.25 Nm / 2.2 lbin

- Conductor cross section: 1.0 to 2.5 mm² / 16 to 14 AWG

- Conductor stripped length: 5 to 6 mm / 0.20 to 0.24 in

- Ambient temperature: -20 °C to 40 °C / -5 °F to 105 °F

- Humidity 30 % to 70 % RH

- Pollution Degree 2

- Max. altitude 2000 m / 6562 ft

- Power supply: 120 VAC, 50/60Hz

- Electrical consumption: < 1.4 W

- Type 1.B Action

- Overvoltage category: III

- Impulse voltage: 2500 V

- Max switching voltage: 120 VAC

- Max current per channel: 8 A

- Max power per channel: 1/3 hp

- Controlling elements: 2 relays

- Controlled elements: 2 circuits or a bi-directional AC motor

- Power metering: Yes

- Overpower protection: Yes

- Overcurrent protection: Yes

- Overvoltage protection: Yes

- Overtemperature Protection: Yes

- RF band: 2400 – 2495 MHz

- Max. RF power: < 20 dBm

- Wi-Fi protocol: 802.11 b/g/n

- Wi-Fi operational range (depending on local conditions):

  – up to 50 m / 160 ft outdoors

  – up to 30 m / 100 ft indoors

- Bluetooth protocol: 4.2

- Bluetooth operational range (depending on local conditions):

  – up to 30 m / 100 ft outdoors

  – up to 10 m / 33 ft indoors

- CPU: ESP32

- Flash: 4 MB

- Schedules: 20

- Webhooks (URL actions): 20 with 5 URLs per hook

- Scripting: mJS

- MQTT: Yes

Declaration of conformity

Hereby, Shelly Europe Ltd. (former Allterco Robotics EOOD) declares that the radio equipment type Shelly Plus 2PM is in compliance with Directive 2014/53/EU, 2014/35/EU, 2014/30/EU, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address: **https://shelly.link/plus2pm_DoC**

Disposal & Recycling

This refers to the waste of electrical and electronic equipment. It is applicable in the US and other countries to collect waste separately.

This symbol on the product or in the accompanying literature indicates that the product should not be dis-posed of in the daily waste. Shelly Plus 2PM must be recycled to avoid possible damage to the environment or hu-man health from uncontrolled waste disposal and to promote the reuse of materials and resources. It is your responsibility to dispose of the device separately from general household waste when it is already unusable.

FCC Notes

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, and (2) this device must accept any interference received, including interference that may cause undesired operation. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modification or change to this equipment. Such modifications or change could void the user's authority to operate the equipment. 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 pro-vide 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.

RF exposure statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition with-out restriction.
Manufacturer: Shelly Europe Ltd. (former Allterco Robotics EOOD)
Address: 103 Cherni vrah Blvd., 1407 Sofia, Bulgaria
Tel.: +359 2 988 7435
E-mail: support@shelly.cloud
Official website: https://www.shelly.com
Changes in the contact information data are published by the Manufacturer on the official website.
All rights to the trademark Shelly® and other intellectual rights associated with this Device belong to Shelly Europe Ltd.

*The Device outputs can be reconfigured to match the required rotation direction.
**Interaction with the button, the switch or a control in the Web Interface or in the App (has to command the cover in the opposite to the direction before the safety switch engagement)
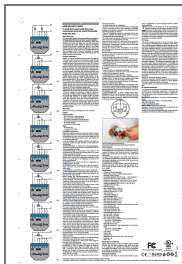
FCC ID: 2ALAY-SHELLYPLUS2PM

E504925
OPEN ENERGY MANAGEMENT EQUIPMENT

B0224

Documents / Resources

Shelly E504925 2 Circuit Wi-Fi Smart Switch [pdf] User Guide
E504925 2 Circuit Wi-Fi Smart Switch, E504925, 2 Circuit Wi-Fi Smart Switch, Wi-Fi Smart Switch, Smart Switch, Switch

References

- **User Manual**