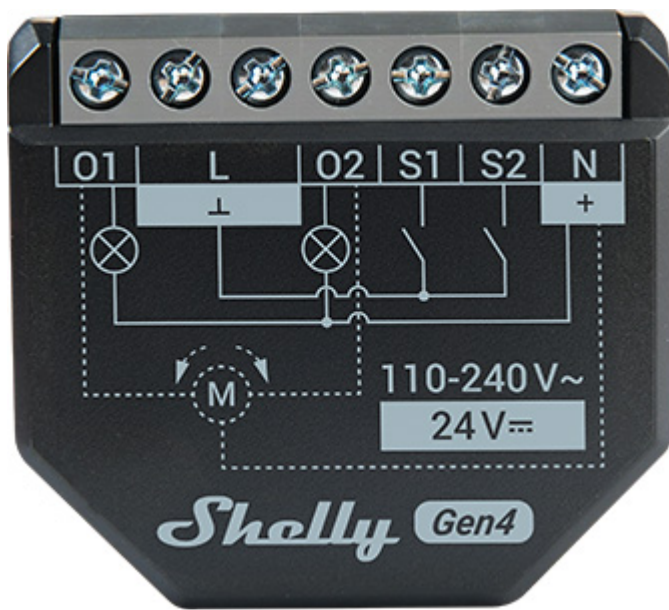




Knowledge Base / Devices / Shelly Gen4 devices

Shelly 2PM Gen4



Device identification

- Device name: **Shelly 2PM Gen4**
- Device model: **S4SW-002P16EU**
- Device SSID: **Shelly2PMG4-XXXXXXXXXXXX**
- BLE Model ID: **0x1032**

Short description

Shelly 2PM Gen4 is a small form factor 2-channel smart switch with power measurement and cover control, which allows remote control of electric appliances through a mobile phone, tablet, PC, or home automation system. It can work standalone in a local Wi-Fi network or it can also be operated through cloud home automation services. The device also has improved processor and increased memory compared to its predecessor. The device supports Venetian blinds similar to its predecessor Shelly 2PM Gen3.

Shelly 2PM Gen4 can be accessed, controlled and monitored remotely from any place where the User has internet connectivity, as long as the device is connected to a Wi-Fi router and the Internet.

It can be retrofitted into standard electrical wall boxes, behind power sockets and light switches or other places with limited space.

Shelly 2PM Gen4 has embedded Web Interface which can be used to monitor and control the device, as well as adjust its settings.

The device has multi-protocol wireless MCU which provide Zigbee and Bluetooth connectivity ensuring a secure connection.

This device is compatible with Matter (default device profile is Switch).

Main features

- **Smart Switch with Power Measurement:** Acts as a smart switch with the added capability of measuring power consumption, allowing you to monitor the energy usage of connected appliances.
- **Compact Design:** Designed as a small form factor switch, making it suitable for retrofitting into standard electrical wall boxes, behind power sockets, light switches, or other confined spaces.
- **Remote Control:** Enables remote control of electric appliances via a mobile phone, tablet, PC, or home automation system.
- **Local and Cloud Control:** Can function independently in a local Wi-Fi network and can also be operated through cloud home automation services.
- **Improved Processor:** Upgraded with an improved processor and Zigbee connectivity for enhanced performance.
- **Zigbee Connectivity:** Zigbee is available for inclusion purposes, which may be useful during the setup process.
- **Remote Access:** Allows remote access, control, and monitoring from any location with internet connectivity, provided the device is connected to a Wi-Fi router and the internet.
- **Embedded Web Interface:** Features an embedded web interface for monitoring, control, and adjustment of settings.
- **BLE Gateway:** Bridge between your Shelly BLU devices and the wider Shelly ecosystem. It receives Bluetooth signals and sends them to the cloud or locally to another non-bluetooth device.

- **Zigbee Range extender for IoT devices:** A Zigbee extender is employed to expand the reach of your Zigbee network by receiving your Zigbee signal, enhancing its strength, and then transmitting the enhanced signal over a wider area.
- **Wi-Fi Range extender for IoT devices:** A Wi-Fi extender is employed to expand the reach of your Wi-Fi network by receiving your current Wi-Fi signal, enhancing its strength, and then transmitting the enhanced signal over a wider area.
- **Scripting:** <https://shelly-api-docs.shelly.cloud/gen2/Scripts/ShellyScriptLanguageFeatures/>
- **Wide range of integrations:** The device can be integrated with 3rd party home systems, documented HTTP API, MQTT(s), Web Hooks over HTTP and HTTPS, UDP
- **KNX:** Supports **KNXnet/IP** communication <https://shelly-api-docs.shelly.cloud/gen2/Integrations/KNX/>
- **Schedules:** Allows scheduling of complex operations to be executed in predefined time window. Users can specify time windows based on date, time of day, weekdays, hours, minutes and seconds.
- **Virtual Components:** <https://shelly-api-docs.shelly.cloud/gen2/DynamicComponents/Virtual/>
- **Venetian blinds mode:** The Device enables remote control of motorized blinds, roller shutters, venetian blinds, awnings, etc. It measures power consumption of the connected device. It is recommended to use only motors with electronic or mechanical limit switches. The motor limit switches must be set correctly before connecting the Device to the motor.

Use cases

- **Appliance Control:** Use it to remotely control and automate the operation of various electric appliances such as lights, fans, or other devices.
- **Power Monitoring:** Monitor the power consumption of connected appliances in real-time. This is useful for understanding energy usage patterns and promoting energy efficiency.
- **Home Automation:** Integrate the Shelly 2PM Gen4 into your home automation system to create custom scenes and schedules for your devices.
- **Energy Efficiency:** Leverage the power measurement feature to identify energy-hungry appliances and make informed decisions to improve overall energy efficiency in your home.

- **Remote Monitoring:** Keep an eye on your devices even when you're away from home. The remote access feature allows you to monitor and control connected appliances from anywhere with internet connectivity.



Home Automation Use Cases

1. Independent Control of Two Circuits

- Control two different lighting circuits or appliances from a single module.
- Great for double wall switches (e.g., living room & hallway lights).
- Monitor power usage separately for each channel.

2. Smart Shutter / Blind / Curtain Control

- Control motorized blinds, roller shutters, or curtains.
- Supports **calibration** for precise open/close/stop positioning.
- Supports tilt control of slats for Venetian Blinds.
- Automate based on time, sun elevation, or weather conditions.

3. Appliance Energy Monitoring

- Independently monitor power use of two appliances (e.g., coffee machine + toaster).
- Receive alerts or trigger actions if devices exceed power thresholds.

4. Bathroom & Kitchen Ventilation

- Channel 1: Bathroom fan control with humidity-based automation.
- Channel 2: Mirror heater or towel rail with scheduling or temperature triggers.



Commercial / Office Use Cases

1. Meeting Room or Zone Lighting

- Automate lighting in two adjacent rooms or zones from one location.
- Track power usage separately for energy audits.

2. Display or Signage Control

- Channel 1: Shop sign lighting.
- Channel 2: Promotional display TV or kiosk.
- Enable schedules or motion-triggered operation.

3. Window Covering Automation

- Automate blinds or shades in conference rooms or lobbies.
- Link to ambient light sensors or meeting schedules.



Industrial and Facility Applications

1. Dual Motor Control

- Control and monitor two low-load motors (e.g., fans, valves, pumps).
- Use with sensors to automate based on environmental conditions (e.g., temperature or water level).

2. Split Load Monitoring

- Monitor energy usage of two specific loads on the same circuit.
- Ideal for tracking power of critical or backup equipment (routers, modems, etc.).

Integrations

Amazon Alexa supported capabilities

Yes

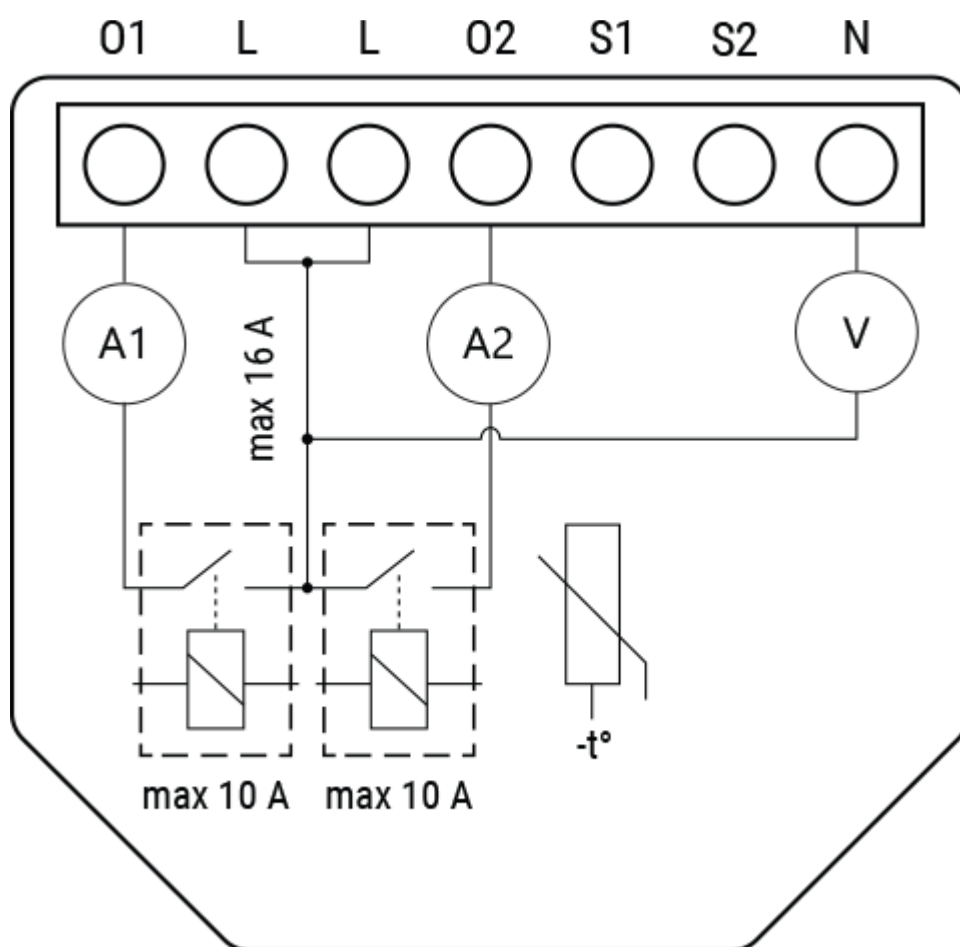
Google Smart Home supported traits

Yes

Samsung SmartThings supported capabilities

Yes

Simplified internal schematics



Device electrical interfaces

Inputs

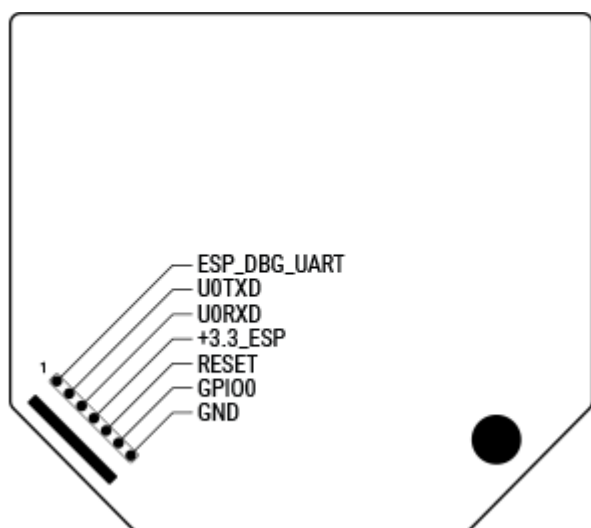
- 2 switch/button inputs on screw terminal: S1 and S2
- 3 power supply inputs on screw terminals: 1 N (+) and 2 L (⚡)

Outputs

- 2 relay outputs with power measurement on screw terminal

Add-on interface

- Shelly proprietary serial interface



⚠ CAUTION! High voltage on the add-on interface when the Device is powered!

Connectivity

- Wi-Fi
- Bluetooth
- Zigbee

Safety functions

- Overheating protection
- Overvoltage protection
- Overcurrent protection
- Overpower protection
- Obstacle detection (cover mode)

- Safety switch (cover mode)

Supported load types

- Resistive (incandescent bulbs, heating appliances)
- Capacitive (capacitor banks, electronic equipment, motor starting capacitors)
- Inductive with RC Snubber (LED light drivers, transformers, fans, refrigerators, air-conditioners, washing machines, tumble dryers)

User interface

Inputs

- One (Control) button
 - Press and hold for 5 seconds to enable Device access point and Bluetooth connection.
 - Press and hold for 10 seconds to factory reset the Device.
 - Press 5 consecutive times to switch the Device from Matter firmware (default) to Zigbee.
 - Press 3 consecutive times to put the Device in Zigbee inclusion mode. The Device stays in this mode for 2 minutes and you can find it in the Home Automation platform through the Zigbee Hub.

Outputs

- LED (monocolor) indication
 - AP (Access Point) enabled and Wi-Fi disabled:
1 second ON / 1 second OFF
 - Wi-Fi enabled, but not connected to a Wi-Fi network:
1 second ON / 3 seconds OFF
 - Connected to a Wi-Fi network:
Constantly ON

- Cloud is enabled, but not connected:
1 second ON / 5 seconds OFF
- Connected to Shelly Cloud:
Constantly ON
- OTA (Over the Air Update):
½ sec ON / ½ second OFF
- Button pressed and held for 5 seconds:
½ second ON / ½ second OFF
- Button presses and held for 10 seconds:
¼ second ON / ¼ second OFF

The list above starts with the initial device status and the lowest priority. Every next state cancels the previous one.

Specifications



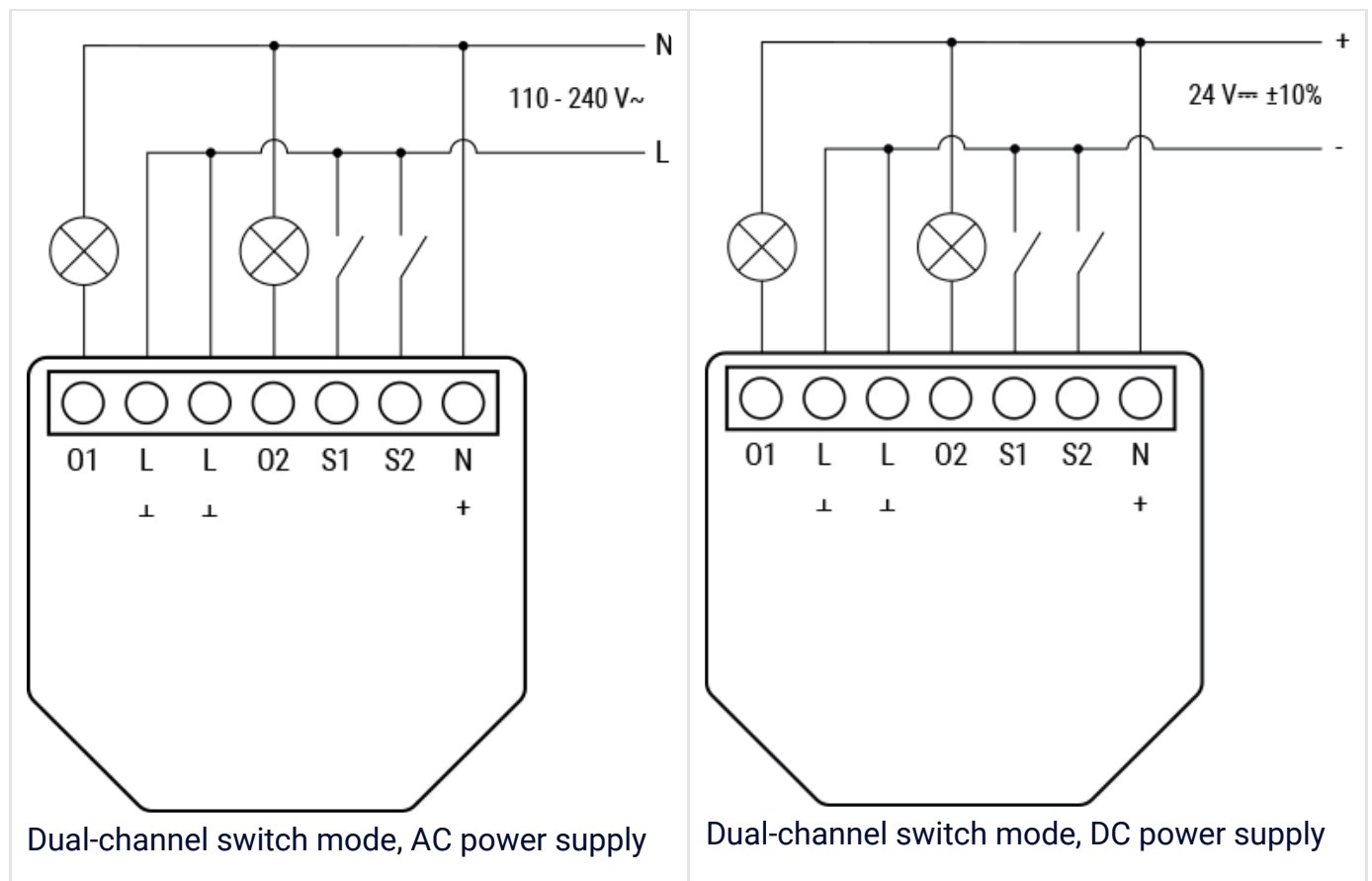
Quantity	Value
Physical	
Size (HxWxD):	37x42x16 ±0.5 mm / 1.46x1.65x0.63 ±0.02 inch
Weight:	30 g / 1.06 oz
Screw terminals max torque:	0.4 Nm / 3.5 lbin
Conductor cross section:	0.2 to 2.5 mm ² / 24 to 14 AWG (solid, stranded, and bootlace ferrules)
Conductor stripped length:	6 to 7 mm / 0.24 to 0.28 in
Mounting:	Wall box
Shell material:	Plastic

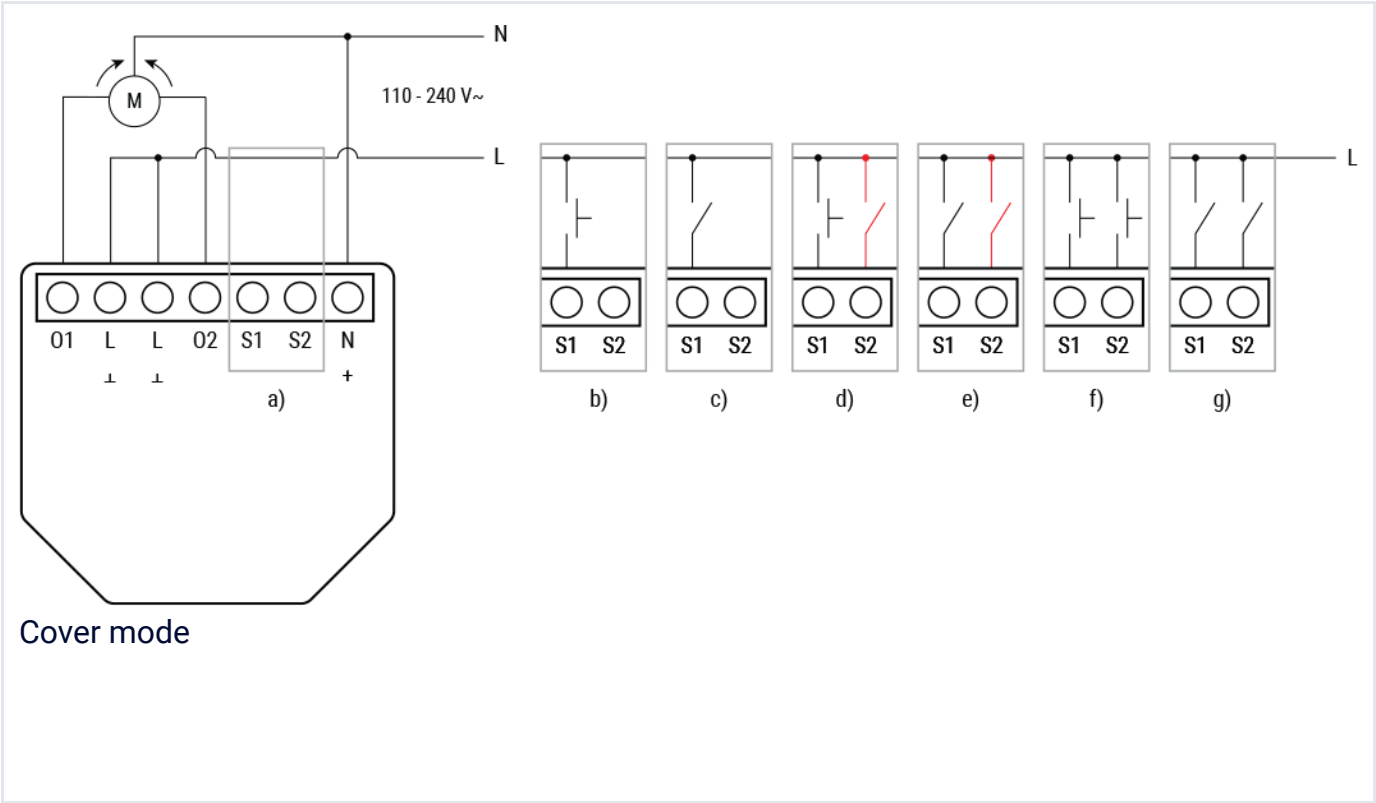
Shell color:	Black
Terminals color:	Grey (Mouse Grey)
Environmental	
Ambient working temperature:	-20°C to 40°C / -5°F to 105°F
Humidity:	30% to 70% RH
Max. altitude:	2000 m / 6562 ft
Electrical	
Power supply:	110 - 240 V~ / 24 VDC ±10%
Power consumption:	< 1.4 W
External protection:	Tripping characteristic B or C, 16A max. rated current, min. 6 kA interrupting rating, energy limiting class 3
Output circuits ratings	
Max. switching voltage:	• 240 V~ • 30 V_{DC}
Max. switching current AC:	10 A (per channel), 16 A (total), 18 A (total peak)
Max. switching current DC:	10 A
Sensors, meters	
Voltmeter (AC):	Yes
Ammeter (AC):	Yes

Internal-temperature sensor:	Yes
Radio	
Wi-Fi	
Protocol:	802.11 b/g/n/ax
RF band:	2412 - 2472 MHz
Max. RF power:	< 20 dBm
Range:	Up to 30 m / 100 ft indoors and 50 m / 160 ft outdoors (Depends on local conditions)
Bluetooth	
Protocol:	5.0
RF band:	2402 - 2480 MHz
Max. RF power:	< 4 dBm
Range:	Up to 10 m / 33 ft indoors and 30 m / 100 ft outdoors (Depends on local conditions)
Zigbee	
Protocol:	802.15.4
RF bands:	2400 to 2483.5 MHz
Max. RF power:	< 20 dBm
Range:	Up to 100 m / 328 ft indoors and 300 meters / 984 ft outdoors (Depends on local conditions)
Microcontroller unit	

CPU:	ESP-Shelly-C68F
Flash:	8MB
Firmware capabilities	
Schedules:	20
Webhooks (URL actions):	20 with 5 URLs per hook
Scripting:	Yes
MQTT:	Yes

Basic wiring diagrams





Legend



Terminals		Wires	
01, 02:	Load circuit output terminals	N:	Neutral wire
L:	Live terminal (110-240 V~)	L:	Live wire (110-240 V~)
S1, S2:	Switch input terminals	+:	24 V $\equiv$ positive wire
S1, S2	Switch input terminals	-	24 V $\equiv$ positive wire
+:	24V $\equiv$ positive terminal		
⊠:	24V $\equiv$ negative terminal		

Troubleshooting

Components and APIs