Technical Specifications

The following table lists the key hardware and electrical specifications of the **SMLIGHT SLWF-09** LED controller and its supported add-on modules.

7.1 Main Board

Parameter	Specification
MCU	ESP32-D0WD-V3, dual-core 240 MHz
Flash Memory	16 MB
Default Firmware	WLED (latest stable release)
Power Input Options	USB-C (5V or 12V), DC plug-in terminal (5V–12V DC), VIN fast-clips terminal (5V–12V DC), PoE via add-on (5V output)
LED Output Channels	2 channels (expandable up to 4 via DIY GPIO)
Supported LED Types	WS2812B, SK6812, APA102, and other 3-wire or 4-wire addressable LEDs
Max LED Voltage	12V
Max LED Current	With an **external PSU** (current passes through the controller terminals) - **up to 20A**. With an **external PSU** directly connected to the LED strip - **unlimited**. Using **USB-C** - **up to 5A**. Using **DC5.5** - **up to 3A**. Using **POE Addon - up to 800mA**.
Data Level Shifting	On-board 3.3V → 5V
Connectivity	Wi-Fi 2.4 GHz (IEEE 802.11 b/g/n), Ethernet via add-on
USB Interface	USB-C with UART auto-programming
Buttons	2 buttons, fully configurable
Operating Temperature	-10 °C to +60 °C
Dimensions	57 × 30 × 23 mm

7.2 Ethernet Add-on (Optional)

Parameter	Specification
Ethernet PHY	LAN8720
Speed	10/100 Mbps full-duplex
Connector	RJ45 with integrated magnetics and status LEDs
Power Requirement	Powered by main board
Dimensions	60 × 18 × 15 mm

7.3 PoE Add-on (Optional)

Parameter	Specification
PoE Standard	IEEE 802.3af Class 0
Input Voltage	37–48 V DC via Ethernet cable
Output Voltage	5 V DC regulated
Max Output Power	**Recommended long-term power: 4W** Maximum **peak** power: up to 12.95 W
Dimensions	31.5 × 28.7 × 16 mm

7.4 Microphone Add-on (Optional)

Parameter	Specification
Microphone Type	ICS-43432 digital MEMS
Interface	I²S
Frequency Response	60 Hz – 15 kHz
Power Requirement	3.3 V (supplied from main board)

Parameter	Specification
Dimensions	15 × 12 mm

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