

LIST OF THE COMPONENT

S. No	Component Name	Specification / Model	Purpose
1	ESP32 Microcontroller	ESP32 Dev Module	Core controller used for data acquisition, processing, and Wi-Fi communication
2	Current Sensor	ACS712 (5A / 20A)	Measures real-time current consumption of the load
3	Voltage Sensor Module	ZMPT101B	Measures AC mains voltage safely
4	Display Unit	16×2 LCD / OLED Display	Displays voltage, current, power, and energy locally
5	Relay Module	5V Single Channel Relay	Enables remote switching and load control
6	Power Supply	5V / 3.3V Regulated Supply	Provides stable power to ESP32 and sensors
7	Load	Bulb / Fan / Electrical Appliance	Device whose power consumption is monitored
8	Wi-Fi Network	Internet Connectivity	Transfers real-time data to cloud/mobile application
9	Passive Components	Resistors, Capacitors	Signal conditioning and voltage regulation
10	Connecting Accessories	Breadboard, Jumper Wires	Used for circuit connections and prototyping