Innovative Grid Services

Empowering the furture with Smart Grid Innovation

IIT KANPUR

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SMART PLUG

IOT ENABLED SMART ENERGY MANAGEMENT PLUG

A multifunctional IoT-based power plug for Residential, Commercial, and Industrial power control with real-time monitoring and automation.

Demand Side Response | **Enhance Lifestyle** | **Lower Energy Bills**

PROBLEM

- High energy wastage due to unmanaged loads
- Lack of real-time appliance monitoring
- Manual operation increases inefficiency
- Limited control during peak demand periods
- Absence of intelligent automation systems

SOLUTION

- Real-time monitoring and energy analytics
- Intelligent scheduling and automation
- Remote appliance management via Wi-Fi
- AI-ready smart energy integration
- Fast response and self-healing communication

APPLICATION AREAS

Residential
- Home automation
- Energy monitoring
- Convenience automation

Industrial
- Load management
- Operational efficiency
- Safety compliance

Commercial
- Warehouse automation
- Office energy management
- Comfort & efficiency systems

KEY FEATURES

- Remote ON/OFF, Wi-Fi Enabled (2.4 GHz)
- Energy Monitoring, Scheduling & Timers
- Measures ≥ 5W , Voice Control, Temperature Sensor
- Fast Data Updates (<0.5 seconds) Accurate Data, Bypass Mode 15-16 Amp
- Infrared Control Consumes 1W Self-Healing Capability

BENEFITS

- Lower electricity bills, Future-ready IoT infrastructure
- Improved operational efficiency
- Enhanced comfort & convenience
- Demand-side response support
- Smart automation for homes & industries

SYSTEM ARCHITECTURE

OPERATIONS

- Remote Appliance Control
- Real-Time Energy Optimization
- Smart Scheduling & Automation
- Intelligent Load Management

MEASURED PARAMETERS

- Voltage Monitoring (V)
- Current Measurement (A)
- Real-Time Power Consumption (W/kW)
- Energy Usage Analytics (kWh)
- Frequency Monitoring (Hz)
- Power Factor Analysis
- Appliance Load Status Detection
- Temperature Sensing & Monitoring

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