Silaero

Energy-Smart Systems for Homes and Buildings

Communication, Security, and Controls

including

“Bio-Feedback” for Home Energy

- Consumer Problems, Desires, and Motivations
- Market Background
- Energy-Smart Products
- Marketing and Sales Strategy
- Operations Strategy

Consumer Problems, Desires, and Motivations

- Energy Use Awareness
  - Save $
- Effective Controls and Automation
  - Save $, Convenience, Comfort
- Desire for Home Networking
  - Entertainment, Productivity, Communication, Convenience
- Video Communications
  - Security and Remote Care

Energy Use Awareness

- Electrical
  - Where is the power used?
    - What is the relative consumption over time?
    - Understand duty-cycle effects
    - Switches left “on” accidentally or habitually
      - What is the effect of flipping a switch?
- Thermal
  - Rooms over-heated or over-cooled
  - Energy leakage
    - Poor weather seals
    - Windows left open
  - Comfort:
    - Can the occupant obtain the proper temperature at the desired location?
    - Can multiple occupants in different locations be comfortable simultaneously?

Effective Controls and Automation

- Electrical:
  - Home Automation has existed for 25 years but not taken-off
  - Must be:
    - Easy to use
    - Truly effective
    - Provide consistently positive experiences
      - One negative outweighs ten positives
      - The user must feel “in control”
  - Motion detector light switches are inconsistent and frustrating
- Thermal:
  - Thermostats with setback are crude
  - Typical air vents/registers are crude design with manual control

Desire for Home Networking

- Entertainment
  - Audio/video
- Productivity
  - Home office extends throughout the home
- Provides communication infrastructure for additional functionalities:
  - Video security and remote care
    - Security-related data gathering
  - Audio/video intercom
  - Energy-related controls & automation
  - Energy-related data gathering

Video Communications

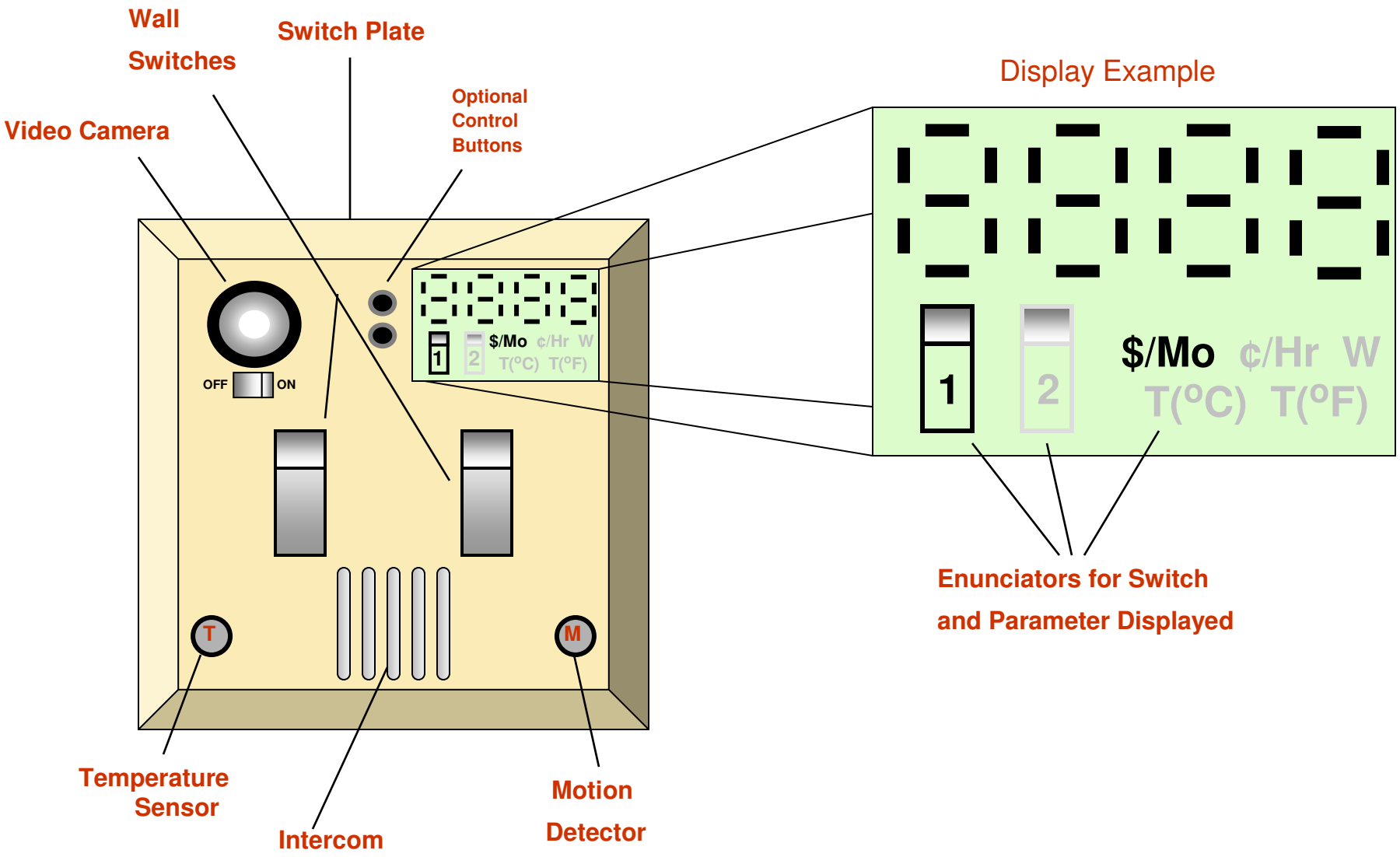
- Video Security
  - Avoid intruder confrontation:
    - Turn on house lights from master location
    - View other locations in home from master location
  - Remotely view home/business interior/exterior in event of alarm
    - Avoid false alarm penalties and inconvenience
- Remote Care
  - Remotely view home interior/exterior
    - Are children and pets OK?
    - Baby sitter trustworthy?
    - Is the home in order?
  - Remote view of the elderly and home-bound
- Audio/Video Intercom
  - Within home
  - Remotely via Internet

Potential Products:

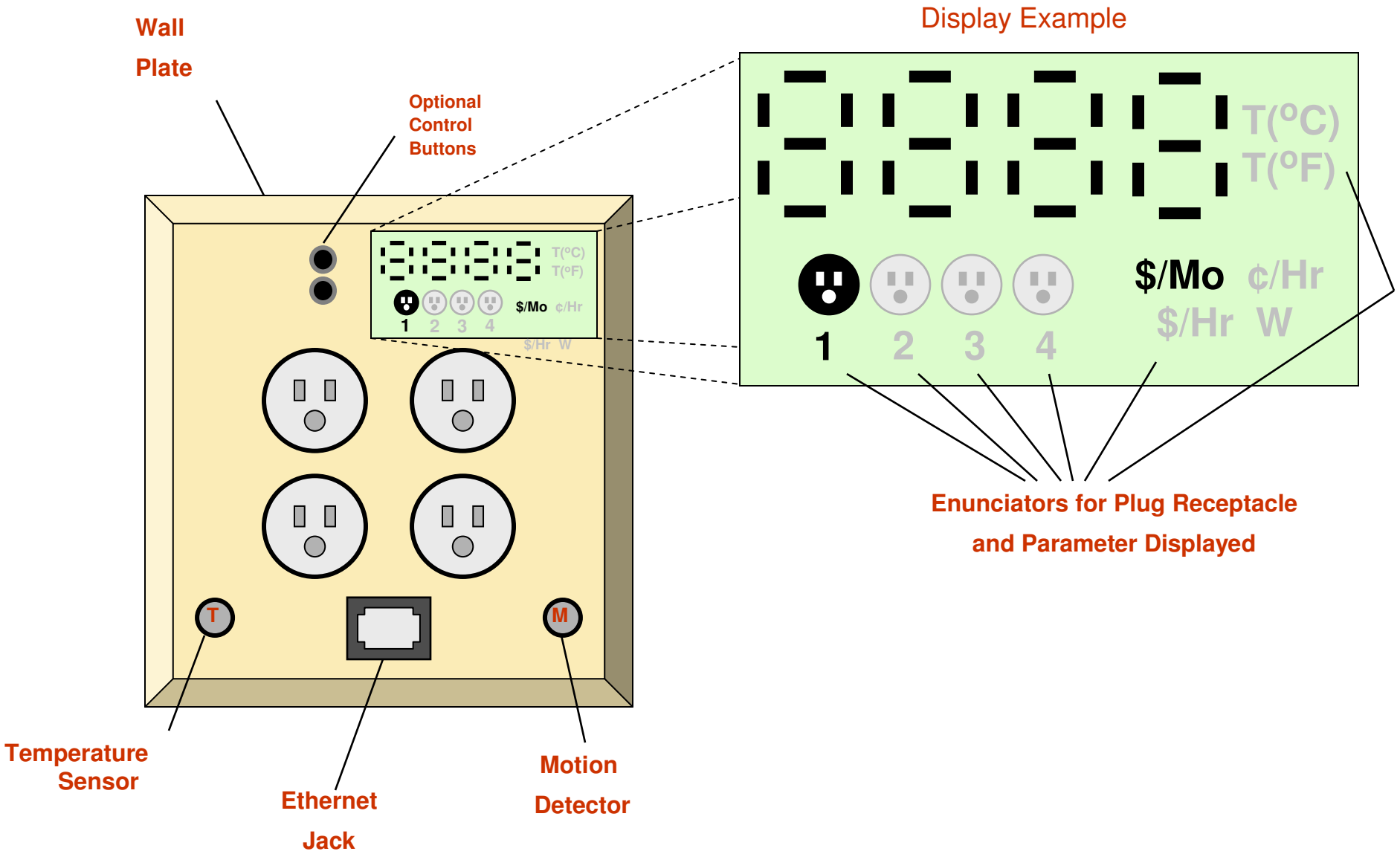
- Energy Monitoring, Profiling, Direct-Feedback
- Effective Energy Controls and Automation
- Video Security Communications
- Home Network Infrastructure – Wireless or Powerline
  - Also supports entertainment distribution

- **Theme:**
  - Easy Retrofit ⇒ “No New Wires”
  - Share the Network Infrastructure
  - Capitalize on Proliferation of Electrical Junction Boxes
    - Convenient Video Installation
    - Measure Energy Usage
      - For Central Profiling
      - For Direct Feedback
    - Measure Temperature
    - Motion Detection
      - Security
      - Intelligent Controls
  - Scalable and Interoperable
    - Support Advancing Standards
    - Support Popular Software Platforms

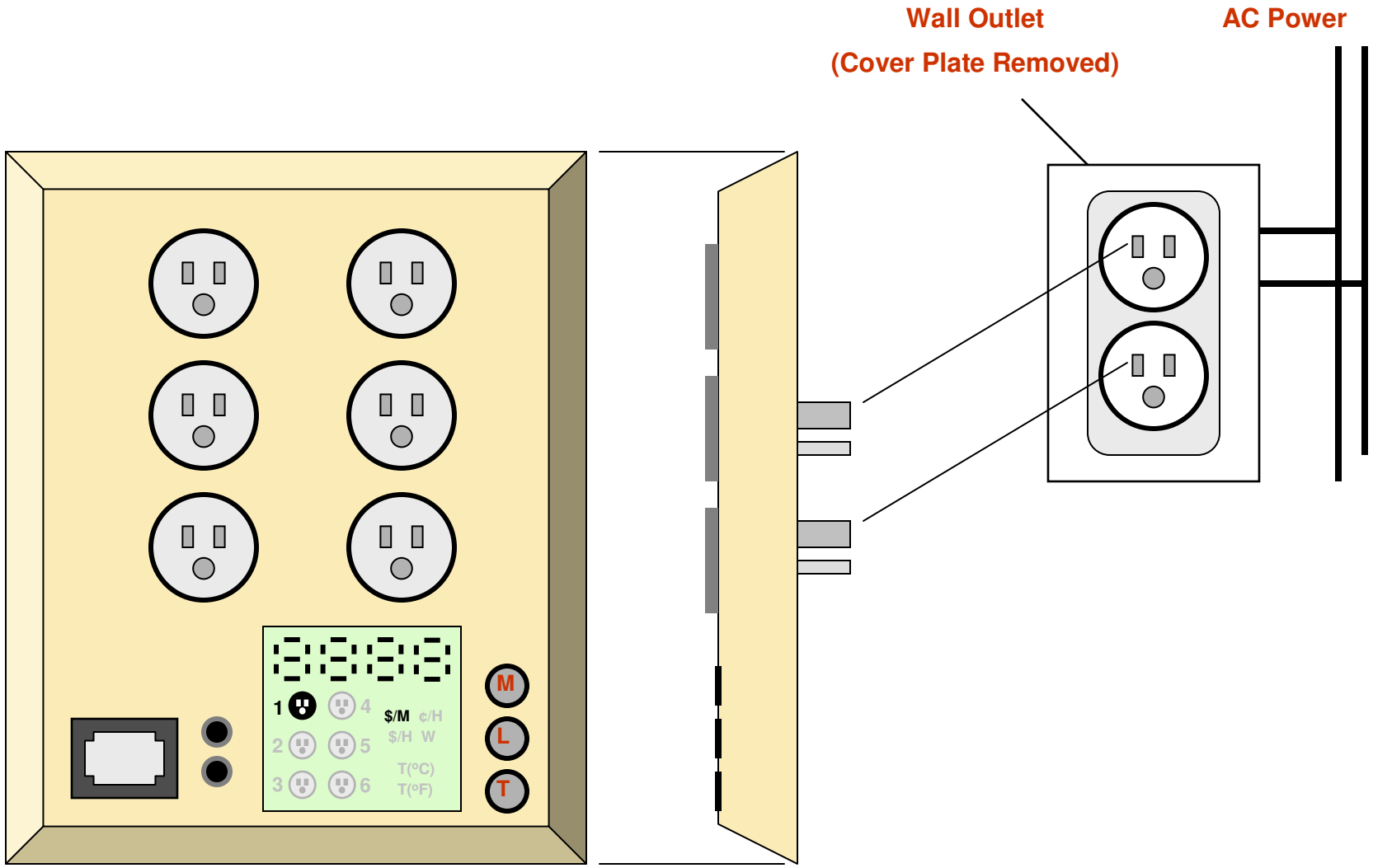
Switch EMAC Point



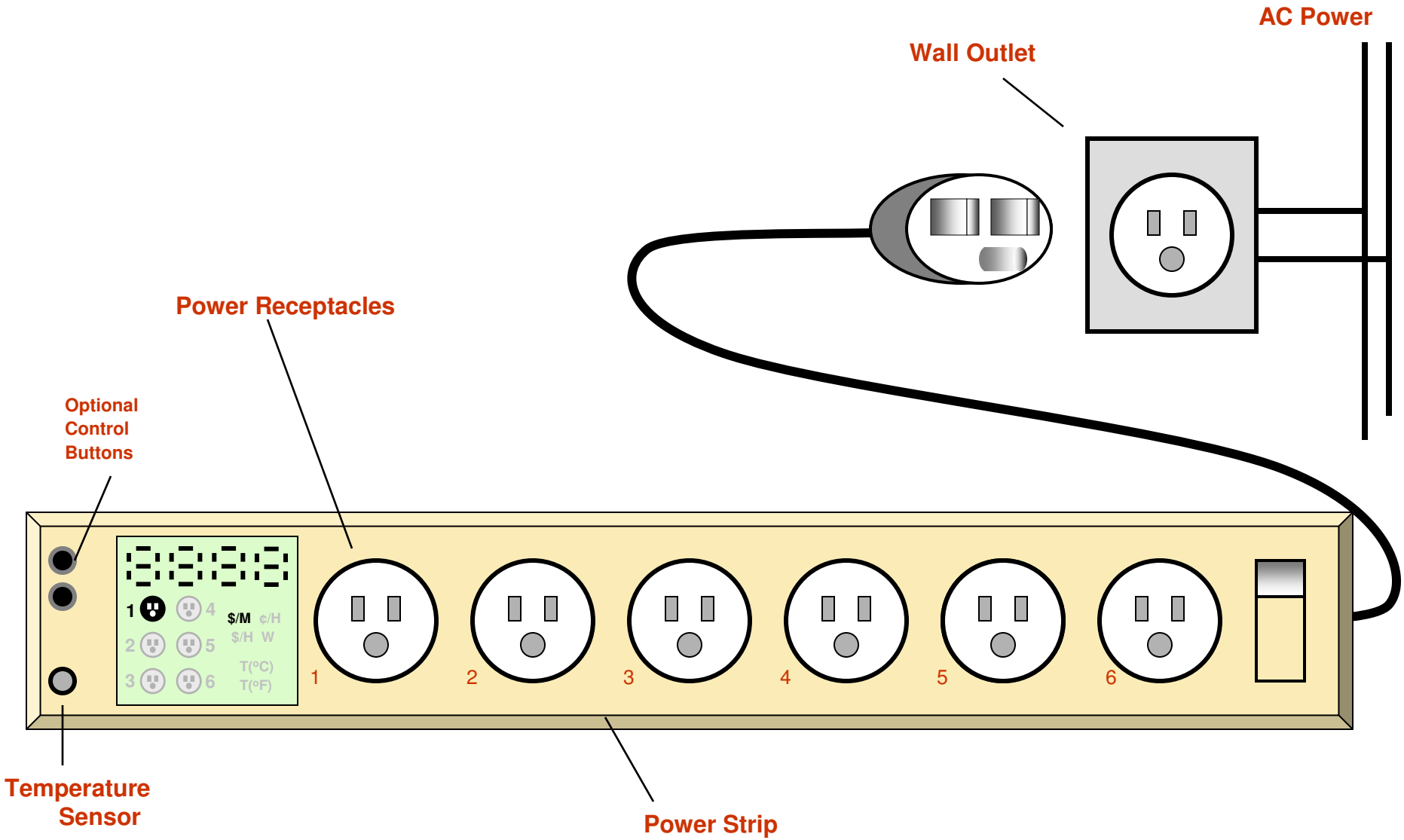
Power Plug Receptacle EMAC Point



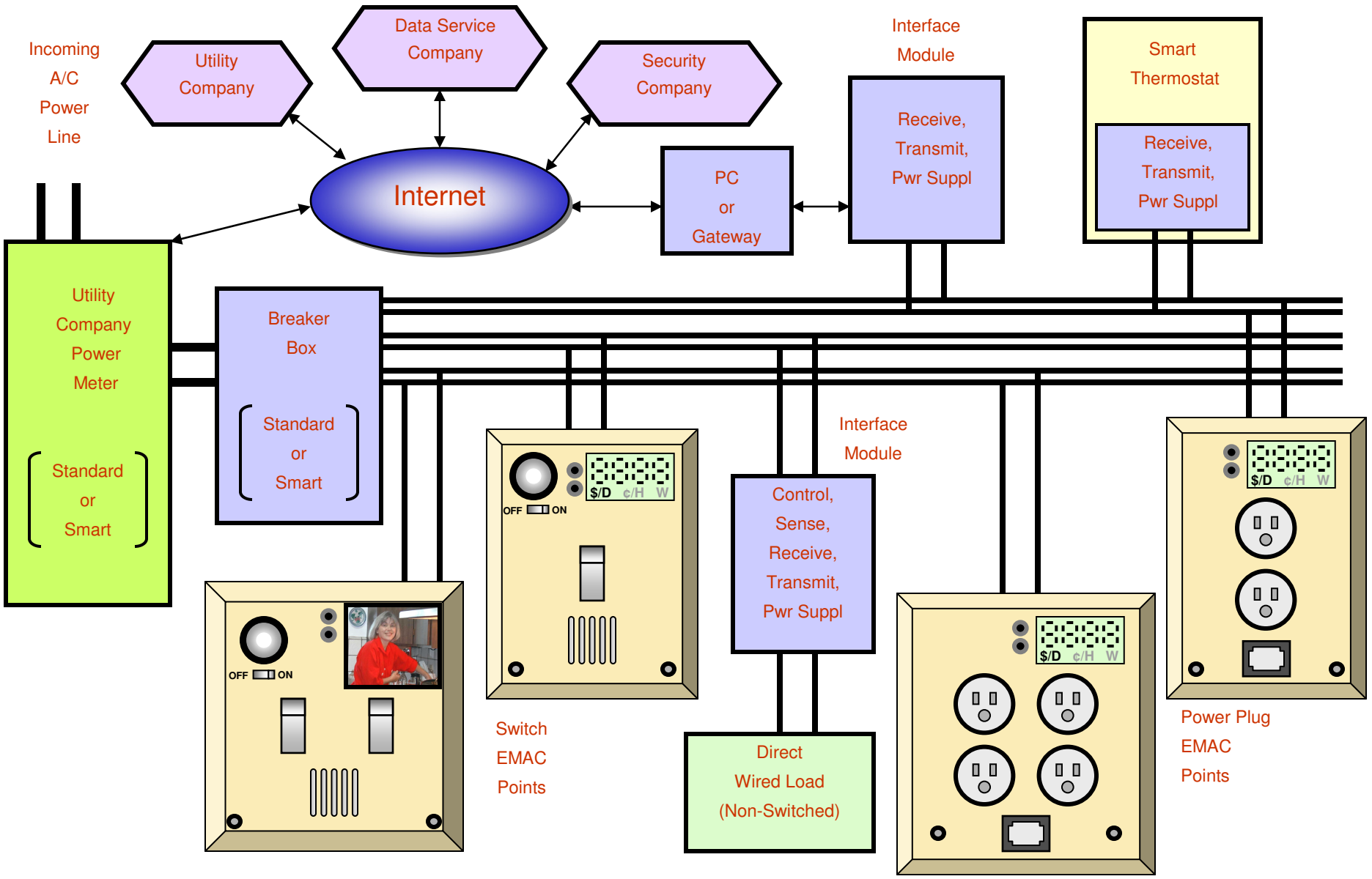
Portable/Add-On EMAC Point



Power Strip EMAC Point

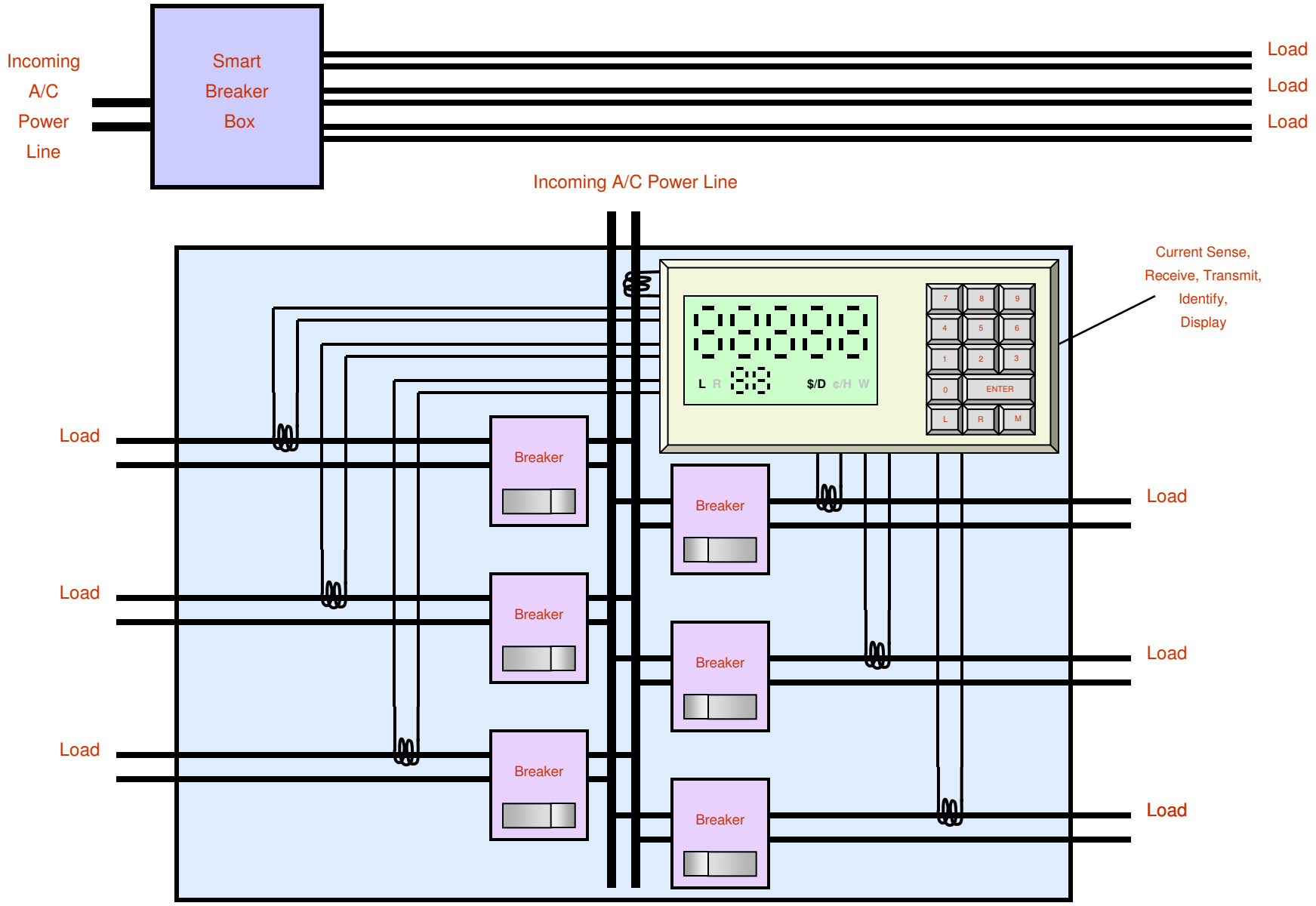


System Overview

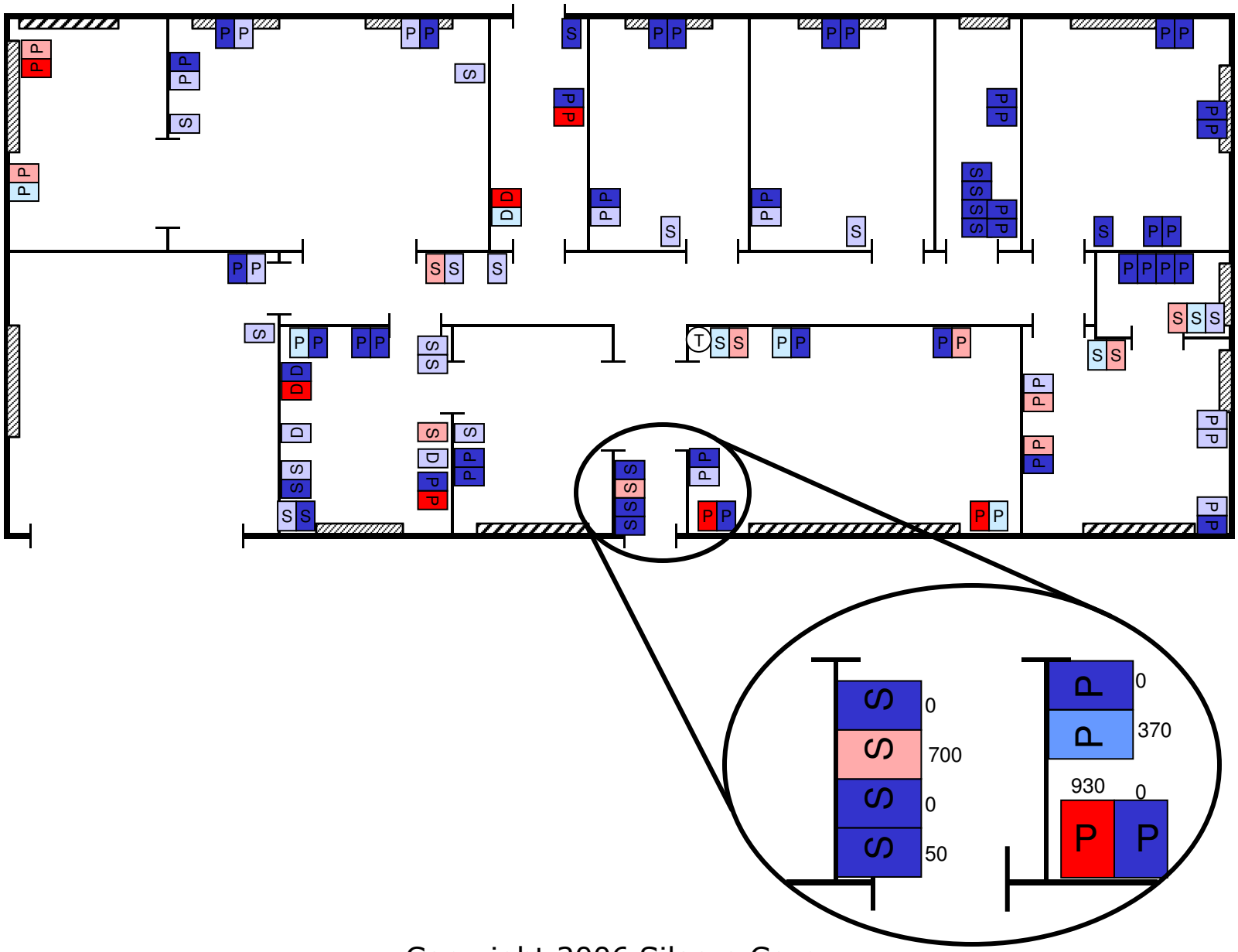


Smart Breaker Box (Retrofit in Standard Box

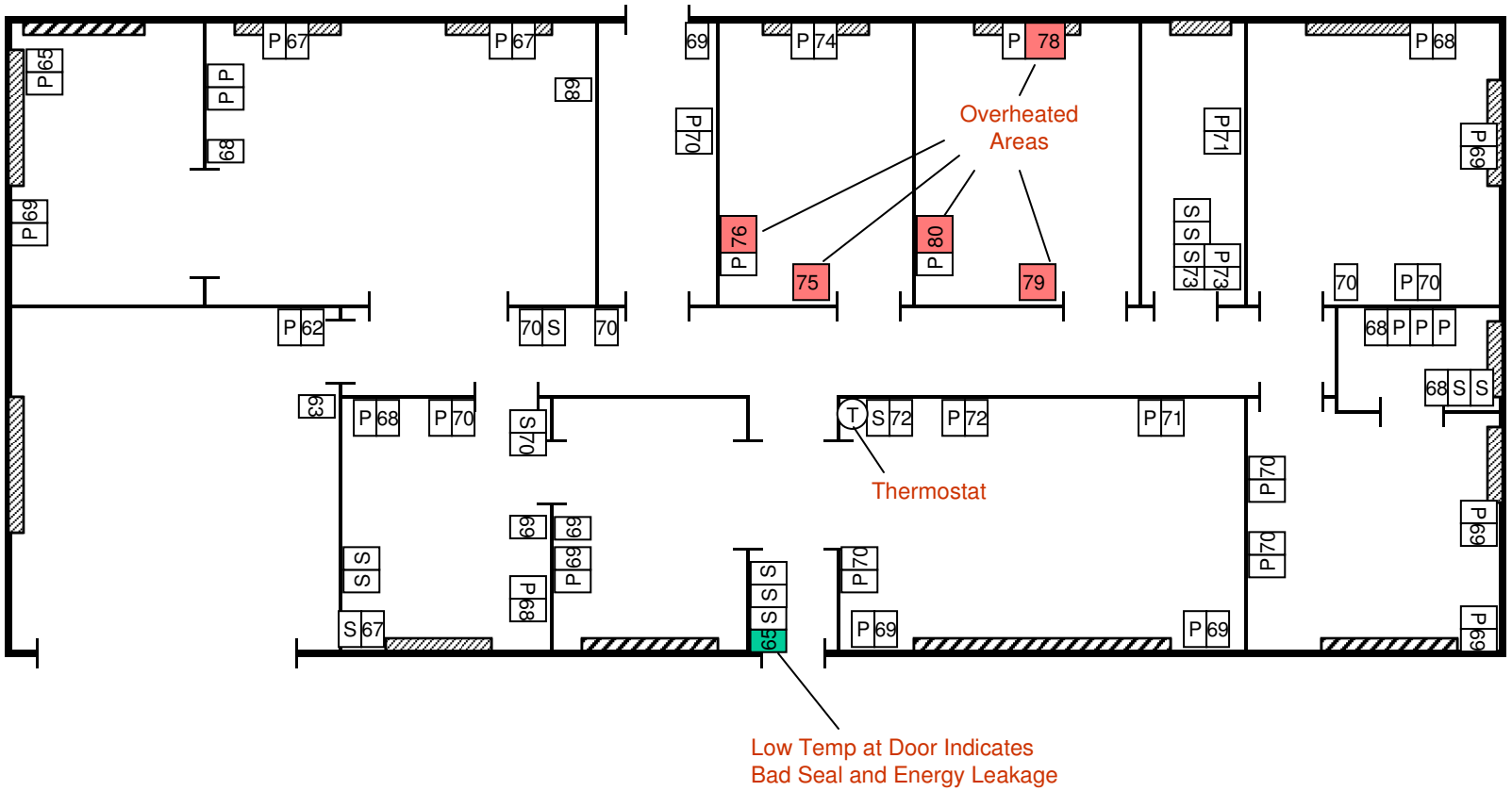
Energy-Smart Home Systems



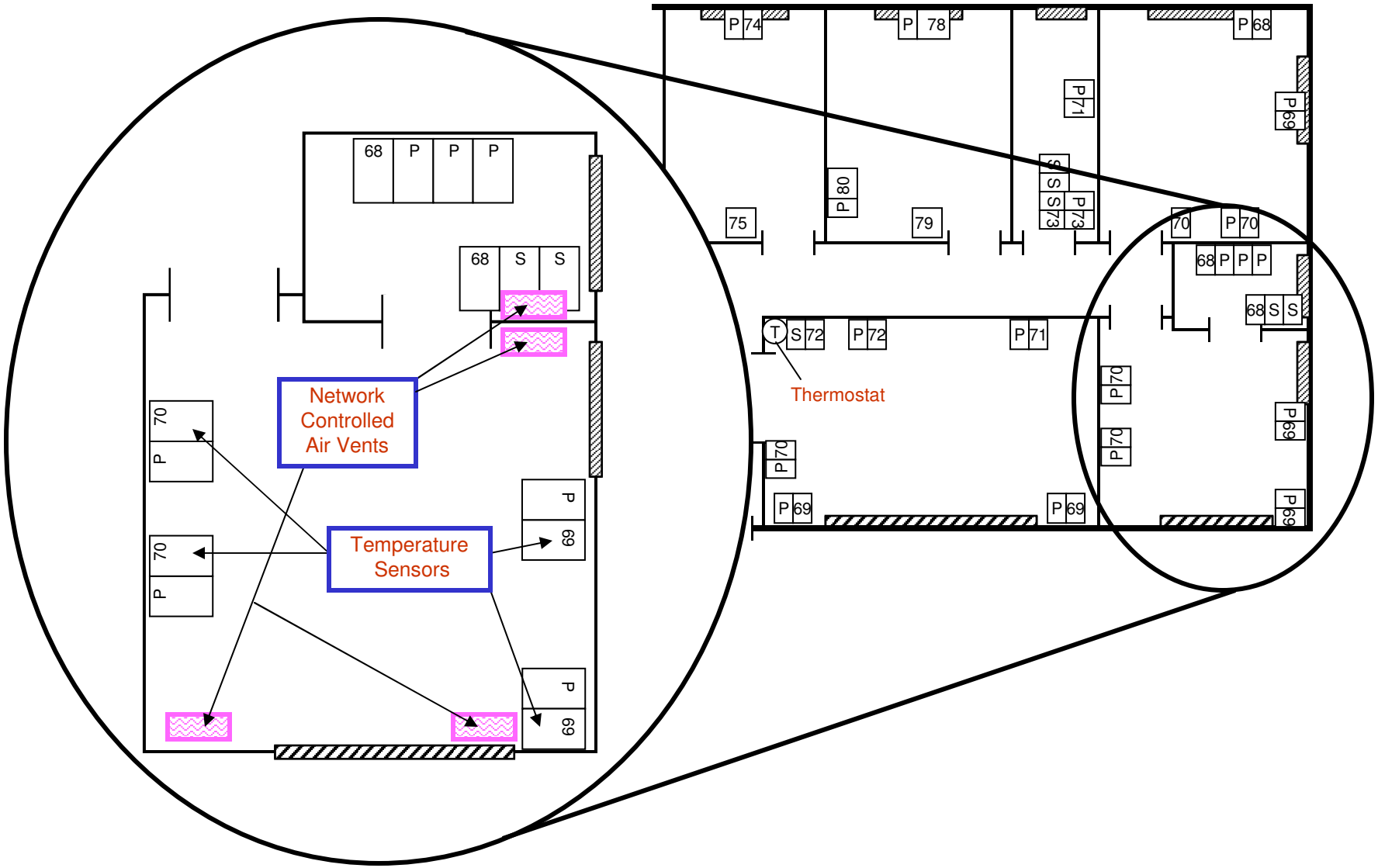
Power Consumption Profile



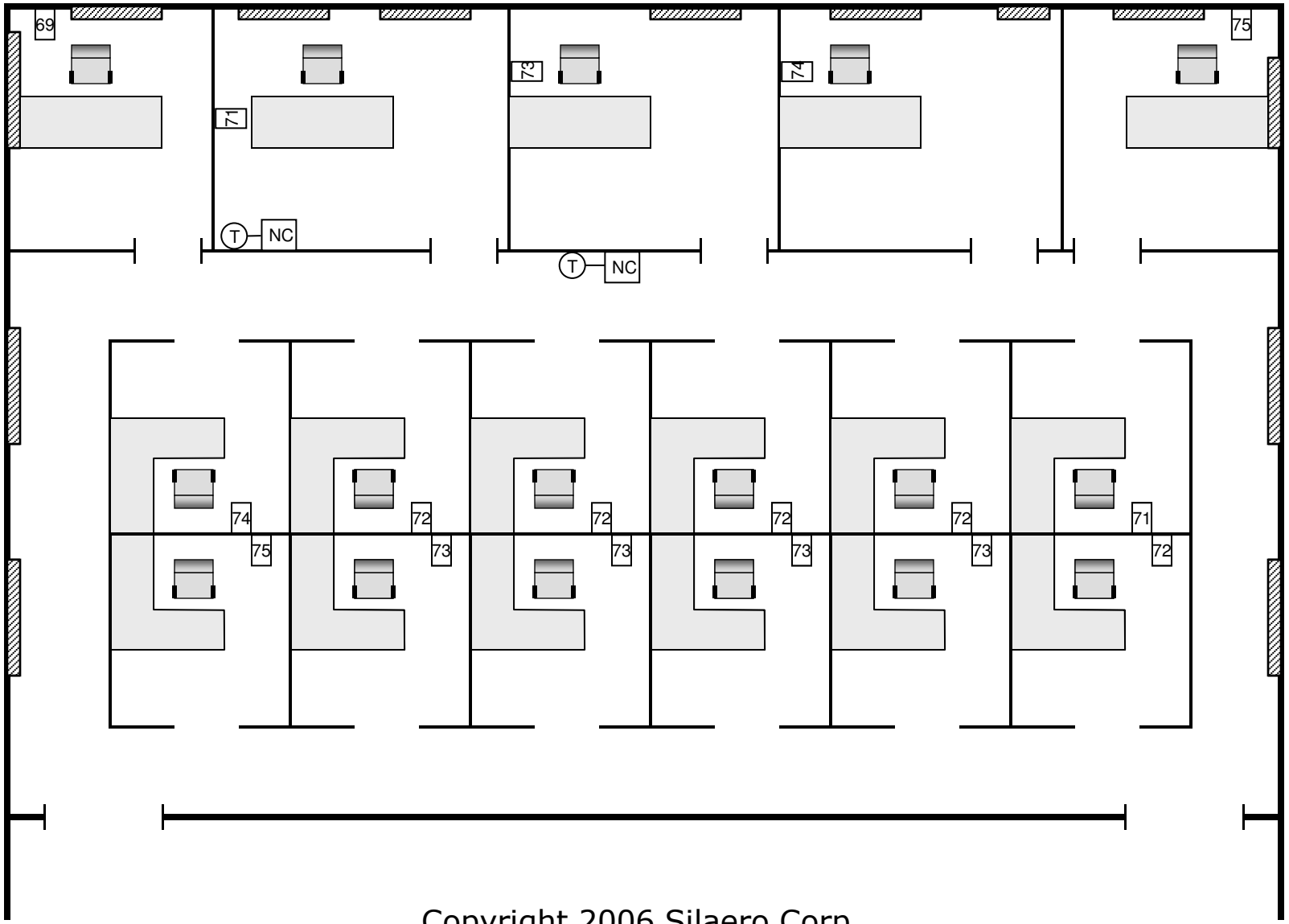
Temperature Profile

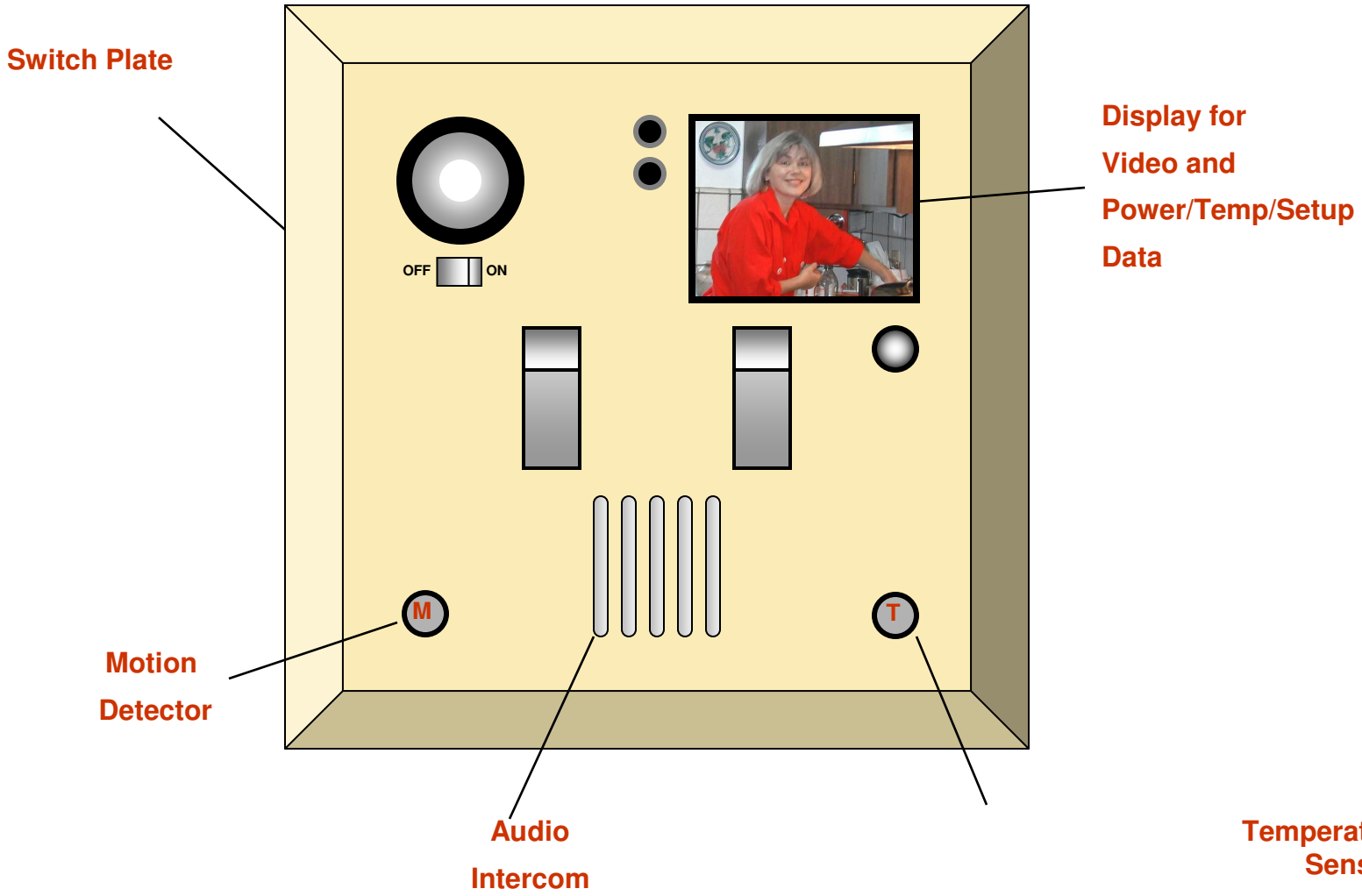


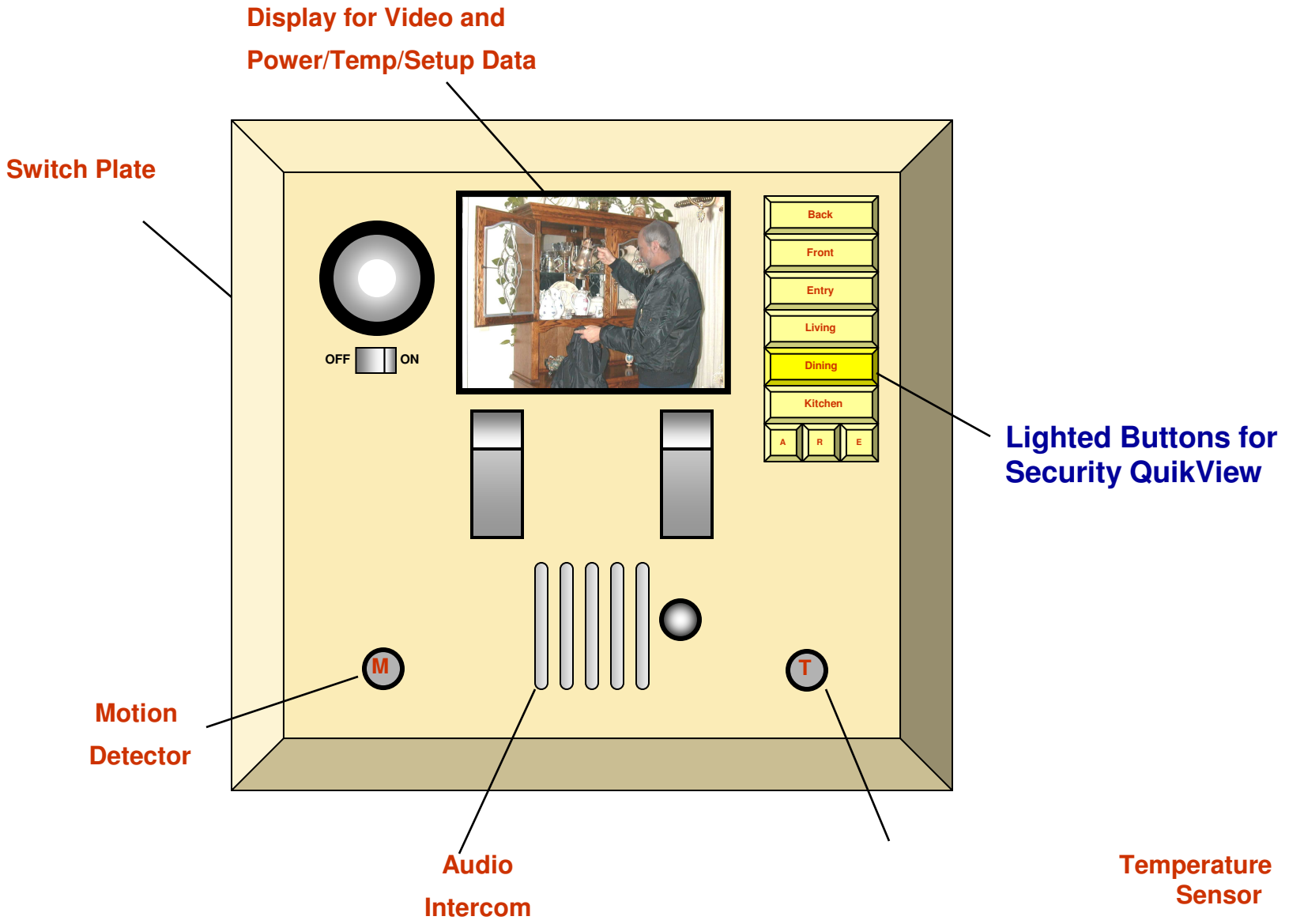
Sensors and Controlled Air Vents

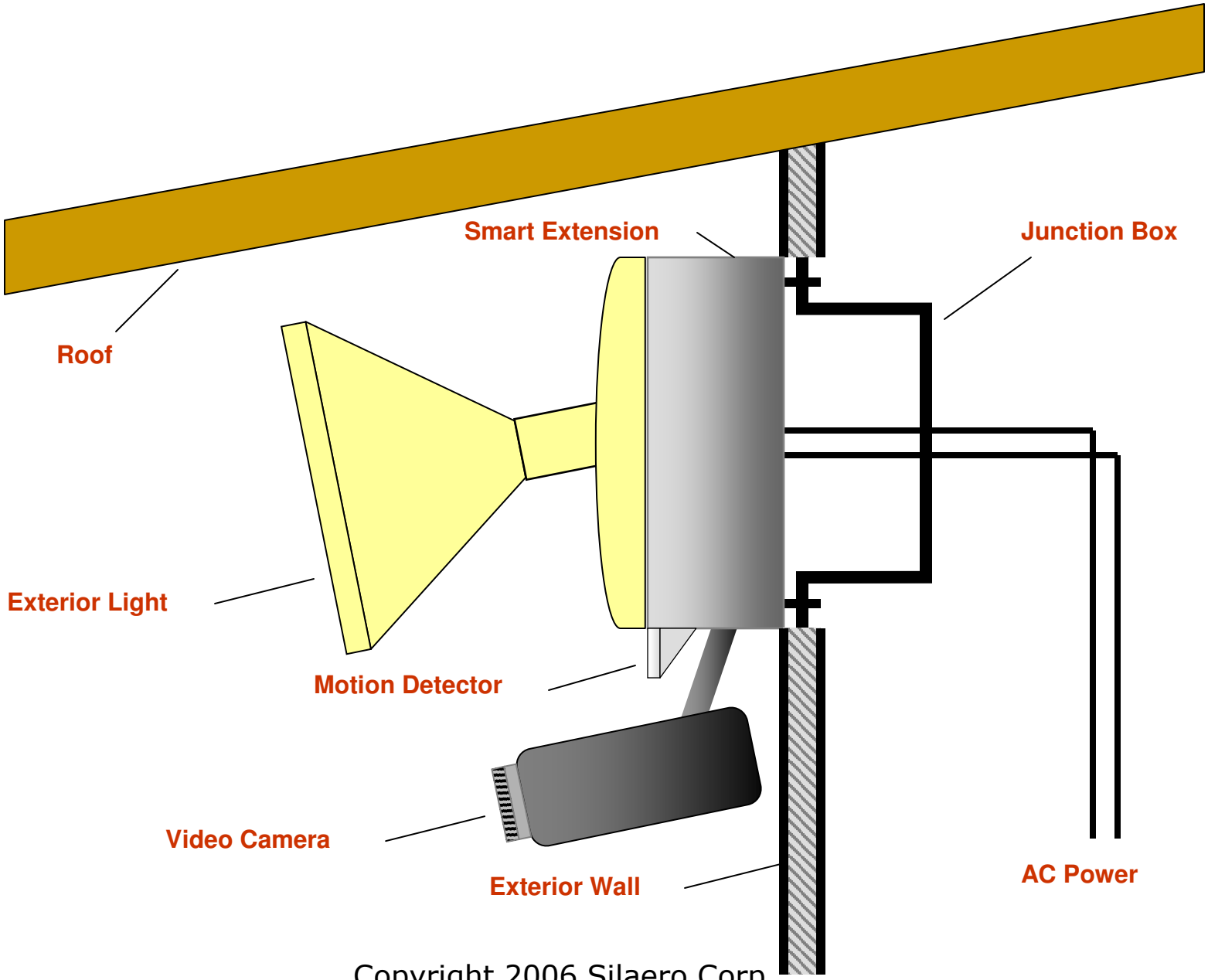


Temperature-Averaged Locality Control via Network Communication
(Office Environment)









EMAC with Wireless Window-Open Detect

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