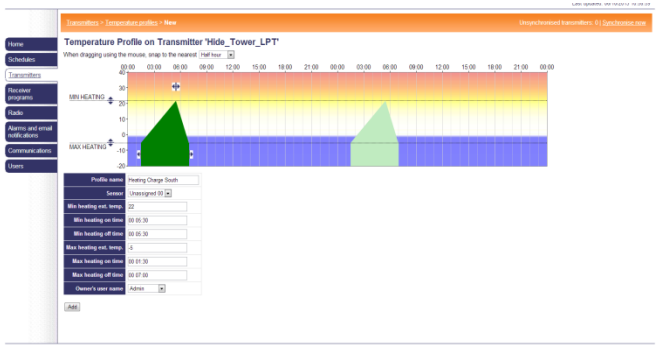
xcelsis
GLOBAL WIRELESS TELEMETRY

For Smart City

Smart City

- More smart control
- More light when needed
- Energy saving
- Minimal infrastructure
- High efficiency

Satisfied society



Z-Lynk system for street lamps control and DSM via power lines

Double use >> same infrastructure

Z-Lynk system configuration

Snart City Central Office
- Control room

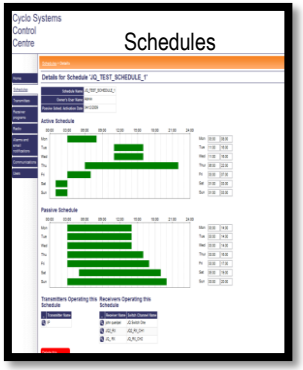
GPRS

Internet

LPT Controler
Injects power line comm. sygnal

Optional mobile app control

SW for system/lamps control
- Cloud based



Power line communication

Dimming lamps

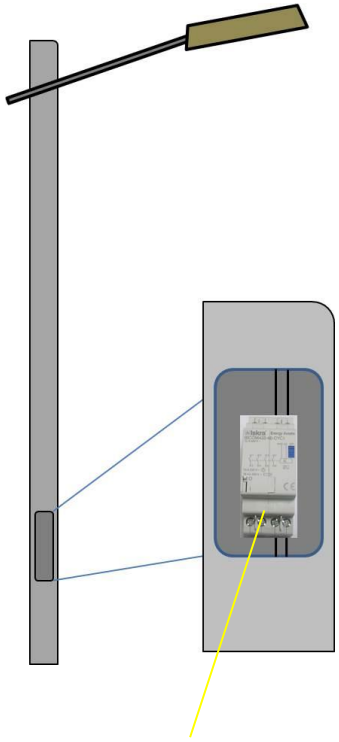
Individual lamp control

Group of lamps control

System for street lamps control via power lines

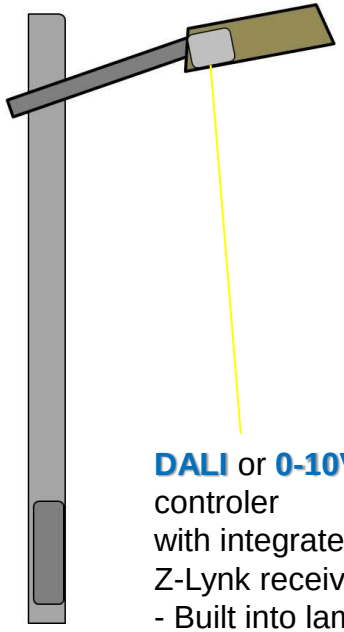
Control options: ON/OFF and Dimming

LED-lamp
With remote ON/OFF control



Switch
with integrated
Z-Lynk receiver
- Built into lamp pole

LED-lamp
With remote Dimmer control



DALI or **0-10V**
controler
with integrated
Z-Lynk receiver
- Built into lamp

- ✓ No additional communication lynks – just existing power lines
- ✓ Robust sygnaling - reliable command excecution
- ✓ Individual, group or broadband lamp addressing
- ✓ Automatic or event-driven control
- ✓ Easy to control: even via mobile app you can do it,
- ✓ Easy system upgrade to DSM function, no add-on infrastructure cost, just add a receiver to the load

Sensors for Monitoring Light and Consumption

Up to 16 external sensors can be fitted to (LPT) Z-LYNK Controller.

Input status is reported to the Z-LYNK controller and back to the management software.

- Light levels (photo-cell sensor)
- Meter pulse counts – power or consumption
- External input status – alarms and triggers

Rules can be set to determine responses by the Z-LYNK controller ensuring automated action to changing demand or other variables

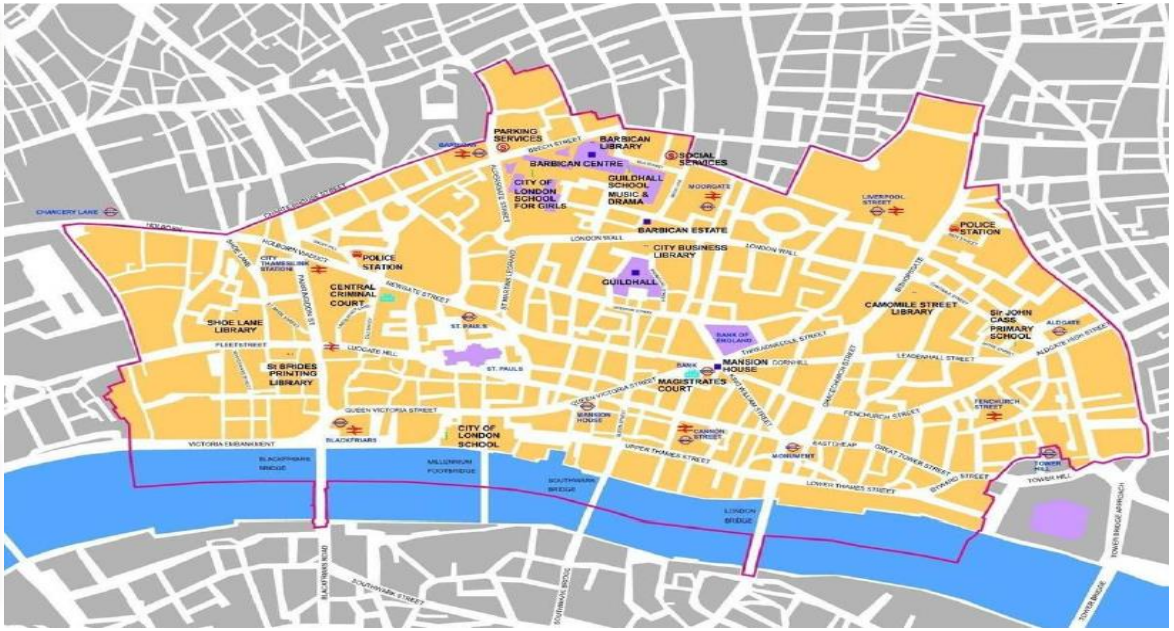
kWh meter

Light sensor

Reference: Z-Lynk system in Action

London's street lighting control – Smart City app

- Existing Smart Grid control to one of the most complex power networks in the world!
- System controls 15,000 street lights and traffic signs in the Square Mile

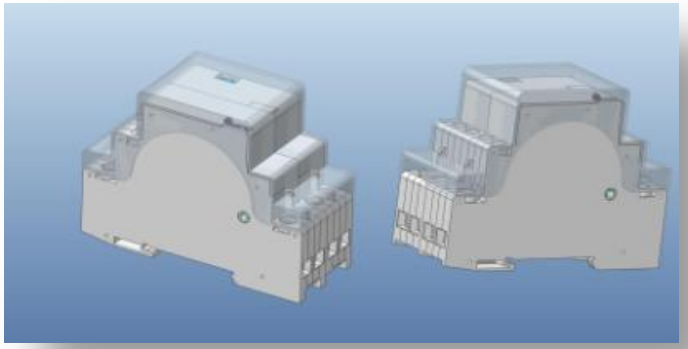


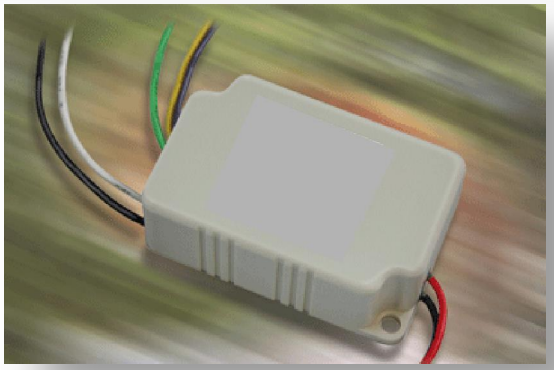
- Unique technology - signal will pass through network transformers and provides 100% network coverage from 11 kV down to 415 V and to every 13A socket

Street Lighting - Current Lighting project with City Of London

- To replace up to 15,000 street lights with dimmable LED luminaires
- Pilot system in Old Jewry Street
- Controlled by cloud based Z-LYNK system
- Collaboration with luminaire manufacturers

Z-LYNK – Receiver Types



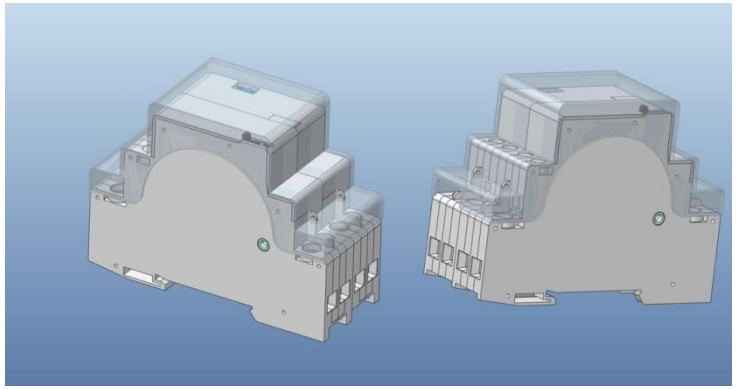


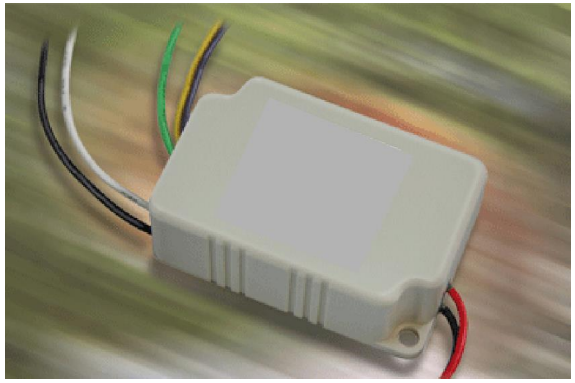
1. **Standard** receiver
   - 2-4 pole **8-32 A** switch
   - Lamp Control, etc.

2. **Dimming** receiver - for control of LED lights
   - DALI Interface
   - 1-10V interface

3. **Load-control** receiver for switching high current loads (**2x100A**)
   - Can be adapted for different applications (chilers, heaters, pumps, etc)

Receiver Common Features





- **Common to Standard DIN Rail or Dimming receivers**
  - Manual override
  - Safety override
  - Local switch override
  - Multiple addresses (10)
  - Locally re-programmable
  - “Freewheeling” in event of signal loss
  - Low self power consumption

xcelsis
GLOBAL WIRELESS TELEMETRY

Background

- Z-LYNK is a product which is a proven control system that fits seamlessly into electricity networks and unobtrusively manages load consumption in lighting, heating and cooling applications.

- In simple terms, a high power transmitter is installed in each substation in areas where load will be controlled. A network of low power transmitters and receivers are installed to control specific electricity loads.

- Many separate load networks can be controlled from one transmitter.

- Z-LYNK uses intelligent software and can operate using static or dynamic switching.

xcelsis
GLOBAL WIRELESS TELEMETRY

Conclusion

- Z-lynk can easily be added to an existing power network and provide automated street ligtning and/or load control or respond to events.
- Receivers can be attached to loads or signals sent to indicate the need to shed loads.
- The system is based on proven technology and is used in London and other networks.
- Peak Energy Saving: The solution allows to add DSM (Demand Side Management) to the network and defer the need to build power stations allowing the existing network to be utilised with minimum change