

Smart lighting control for smart cities

SEAK

SEAK SMART is a reliable **street lighting control system** that uses existing power lines for communication. Besides lighting, SEAK controls provide connectivity also for **electric vehicle chargers** and other **IoT devices**.



What's unique about SEAK?

The technology uses existing 230V power lines to transmit control signals. It does so using original patented reliable low-frequency technology.

- ✓ No additional cables.
- ✓ No antennas and no more radio waves.
- ✓ No repeaters needed.
- ✓ Just reliable communication up to 5 km from each electric cabinet.
- ✓ Can be extended with EV Chargers.

	SEAK powerline	LON-based solution
Maximum distance over powerline	5km+ no repeaters	Require repeaters above 500m
Max. logical group per line	255 per line	127 per segment
Max. logical group per line	No	Required
Procedure to check possibility to deploy	Simple	Special measurements necessary
Possible distortions of el. sine wave	No	Likely
2-way communication	Yes	Yes
Bandwidth	50bit/s	78kbit/s

Over 500.000 luminaires controlled by Seak technology

Spain

Barcelona, Sevilla, Valencia, Malaga, Alicante

Israel

Atlit, Tel Aviv, Hadera

Slovakia and Czechia

70+ cities in CZ and SK

Russia

Uralskyj, Astrachan

Ukraine

Kiev, Mena, Kharkov

India

Mumbai (pilot)

Serbia

Plandiste

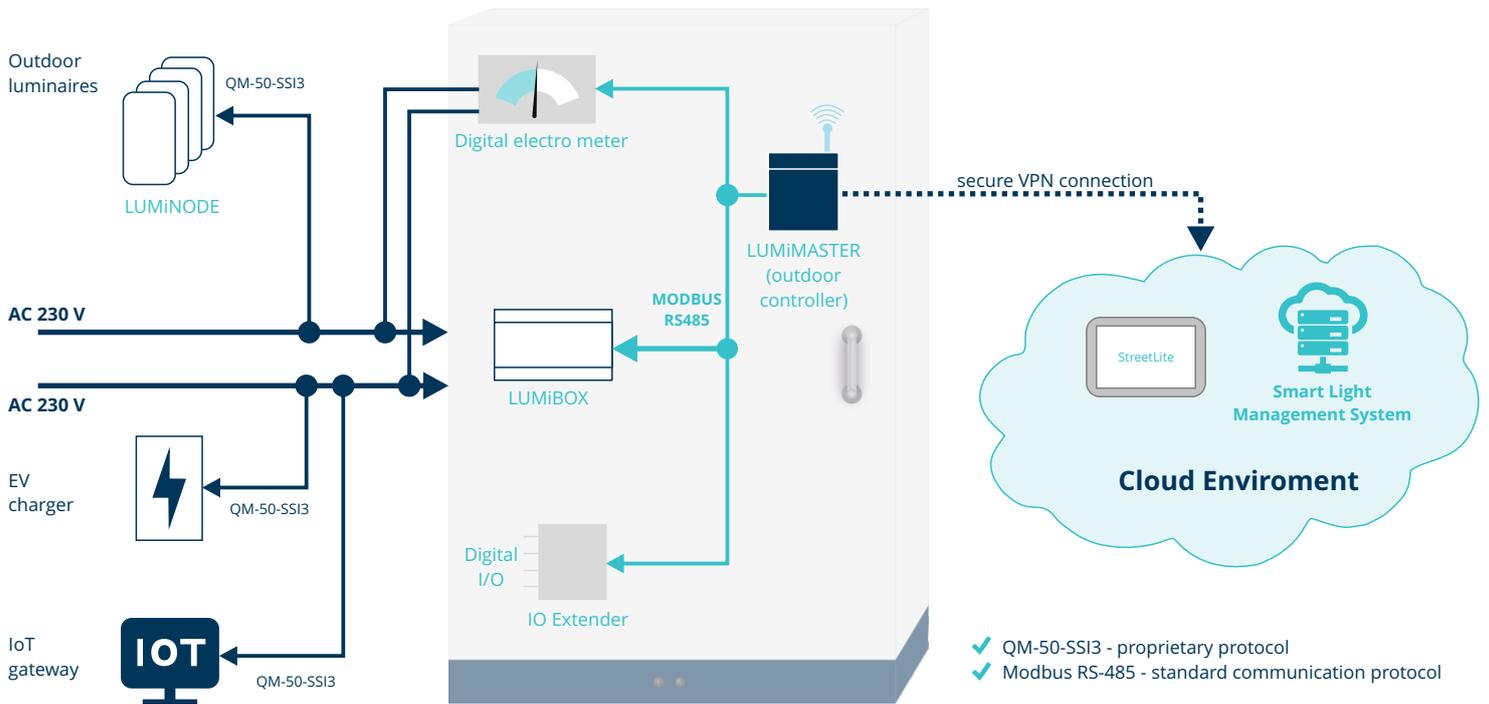
„SEAK technology gives us a competitive edge in smart lighting projects in Israel.“

Malkiel Hagbi, CEO Eneltec (Israel)

„Effective management of public lighting from Seak company has been used in Ptruksa since 2015. We have used the saved money for the reconstruction of sidewalks and roads in our village. The big advantage was that during the installation of control system no excavation work was needed. The existing power lines were used.“

Alexander Takacs, Mayor of Ptruksa (Slovakia)

Technical infrastructure - Outdoor



Outdoor luminaires

In order to read the commands from the powerline, the luminaire needs to contain one of **SEAK demodulators**. You can choose one depending on functions needed and the type of driver used in the luminaire.

Installed inside or on top of the luminaires (NEMA socket) and wired to the LED driver.

Alternatively, you may use:

- ✓ **SCC LED Driver** (30 W - 250 W) with built in SEAK demodulator
- ✓ **VNS HID Ballasts** (45 W - 400 W) with built-in SEAK demodulator
- ✓ **SSR-1000 module** for remote switching of up to 1000 W line
- ✓ Luminaire from selected manufactures, that come with SEAK demodulator out of the box

	LUMiBAR SDM-110	LUMiBAR SDM-DIG	LUMiNODE SDM-DIG-M
LED Driver Required	0-10 V	DALI	DALI
Programmable dimming sequences	✓	✓	✓
Reprogrammable over SEAK PLC	✓	✓	✓
2-way communication	✗	✗	✓
CLO function	✓	✓	✓
Standby function	✓	✓	✓
Motion sensor	✗	✗	✓
Optional - IP65	✗	✗	✓
Dimensions (mm)	75x35x12	75x35x12	123x70x16,5

Controllers

The LUMiMASTER controllers provide remote connectivity, management and automatic diagnostic functions in the system.

They have two separate RS485 lines to communicate with powermeters and IO modules.

	LUMiMASTER SLC-NOM
Remote interface	Ethernet or GSM/GPRS/3G/4G(HSPA+)
Additional input	Luminosity sensor Cabinet door sensor
Dimension	100x110x42 mm

Modulators

Every powerline that serves luminaires needs to be connected through one of SEAK modulators. There are several models available to fit different current levels. Different LUMiBOX modulators may be combined in one cabinet based on actual needs.

	PANTER PNT-360	LUMiBOX SLM-140A	LUMiBOX SLM-160A
Phases	3	1	1
Max. current	3x63A	40A	60A
Communication	one-way	two-way	two-way



The StreetLite app is provided on Software-as-a-Service model. We host it and maintain it for you, so you only need a web browser to use it. No installation necessary.

StreetLite - User-friendly Lighting Control

Give the mayor the power to control the lighting. Easy-to-use application StreetLite allows the authorised person to

- ✓ define logical groups of luminaires across the whole city
- ✓ manage the schedules based on the clock or based on astronomical sunset/sunrise
- ✓ manage the light intensity for the whole city, for luminaire groups or for each luminaire individually
- ✓ check the status of individual luminaires
- ✓ check the reports about consumption, diagnostics messages, savings

Smart lighting and EV charging using existing power lines

SEAK offers the opportunity to extend charging infrastructure with affordable stations for your city. We can use the existing public lighting network and integrate these public charging stations into omnipresent lamps. It is not necessary for the chargers and the new cable to dig the whole street.

You have a choice of three options:

1. EV charger integrated into public lighting
2. Stand-alone EV charger
3. Wallbox EV charger

Load balancing function

EV chargers mounted on lamp poles communicate with SEAK SMART CITY lighting control system to negotiate the power available for EV charging. During the day, street lighting remains in standby mode and we use full line capacity for EV charging. At night, part of the capacity is used for lighting, the rest for cars. Intelligent dimming of luminaires (in times and places where no 100% intensity is required all night) increases even more the maximum power we can deliver to vehicles.

Award for innovation



At Urbis Smart City 2018, the LUMiCHARGER won the Urbis Gold Medal Award for the most innovative Product, when the commission appreciated "the simple deployment of charging stations into existing public lighting network without the need to install additional communication or power cabling with automated electrical load balancing with the lighting system."

Ready for IoT

Additional use cases for SEAK's technology include IoT applications involving sensors for pollution, traffic, noise and other uses.

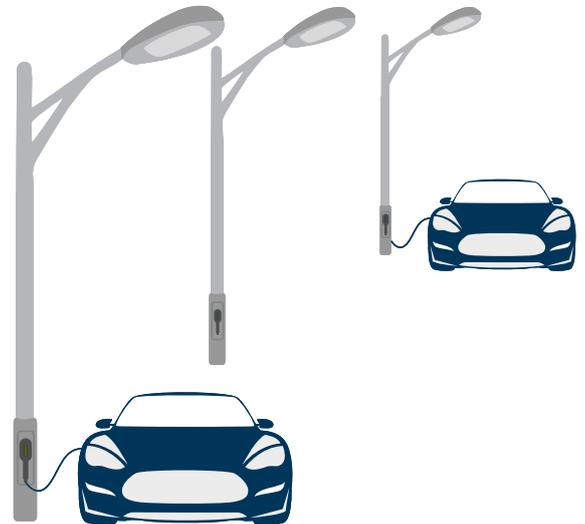
Thanks to LUMiCOM, a module designed to provide transparent communication with 3rd party IoT devices and sensors via existing power line. SEAK power line protocol is used and thus is compatible with other members of SEAK LUMi family.

TYPE OF EV CHARGER

AC power, max. 22kW

TYPE OF CONNECTOR

Type 2 connector (Mennekes)

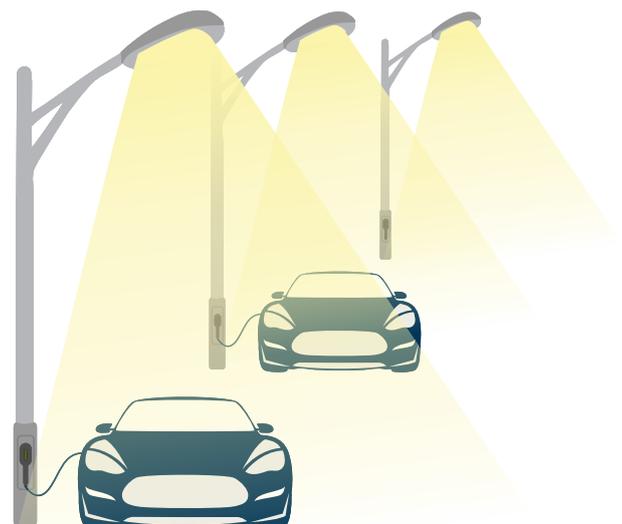


Day: Luminaires at 0 %

Line capacity: 16 kW

Charging: 8 kW

Charging: 8 kW



Night: Luminaires at 80 %

Kapacita linky: 16 kW

Light: 5 kW

Charging: 8 kW