

SmartNodes®

Smart management ecosystem
for standardized street lighting



Use lighting to create smart streets

Shining a light on the smart street



With 20 years of experience on Tegis, LACROIX - City adds the SmartNodes offering to its smart management range. Designed to be deployed on a large scale, this complete ecosystem is dedicated to the intelligent management of standardized light points. It is also the first step towards creating a local communication network, enabling other uses of the smart city.

LACROIX - City offers a full range of smart management solutions for the cabinet, the PLC (Power Line Communication) light point, the radio link light point and the D4i compatible NEMA or Zhaga standard.

Reduce energy expenditure

- Strategies for lowering expenditure for each point or group of light points

Control installation expenses

- Interoperable connected nodes on all types of light fixtures are pre-equipped with NEMA or Zhaga connections
- Automatic locating of each light point, with no manual readout, thanks to the on-board GPS
- Automatic configuration of connected nodes, thanks to the power of the mesh network

Capitalize on investments that have already been made

- Suitable for light fixtures that are equipped with NEMA or Zhaga connections

Simplify maintenance operations

- Automatic remote updating

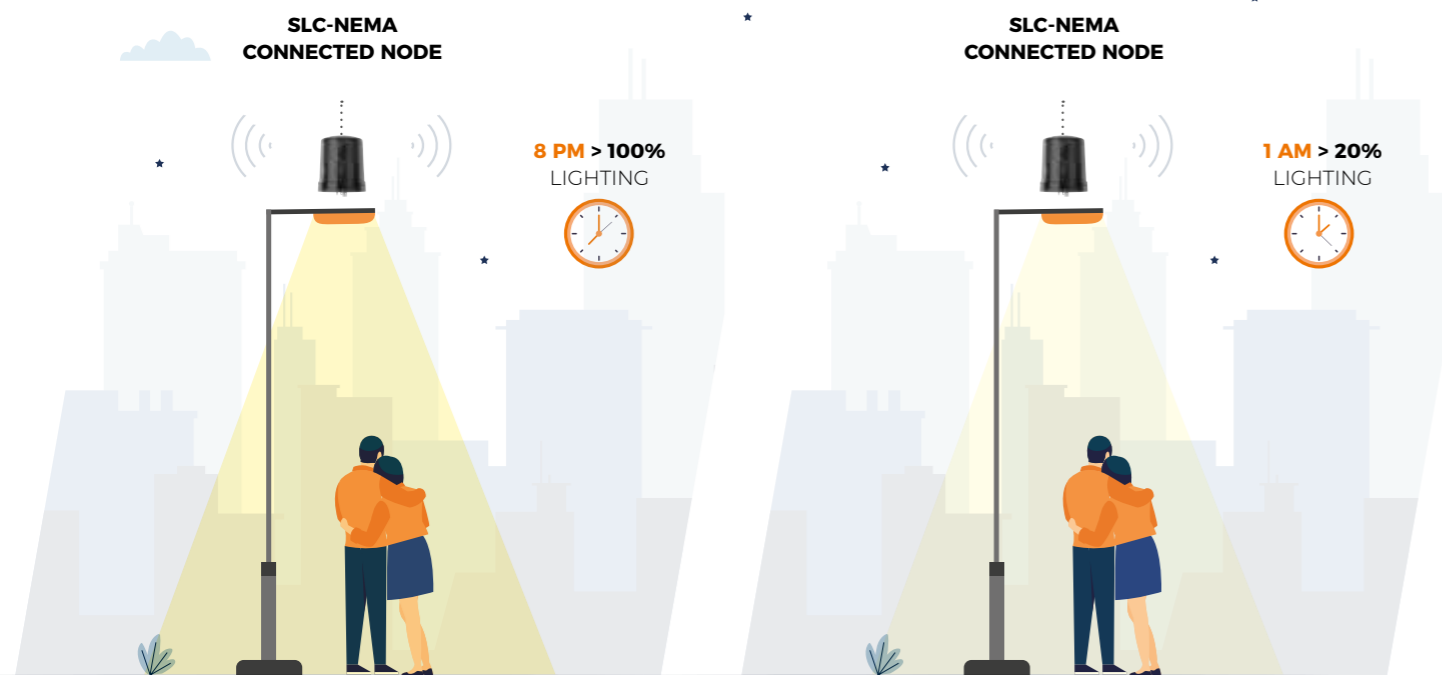
Overcome the constraints associated with the structures of existing electricity networks

- Installations with a common neutral
- Medium voltage installations

Transform street lighting into a radio link communications network

- Sensors for specific needs: presence detection, noise sensor

1 Control and management of light point groups



Management of light points by logic group.

Number of drivers that can be managed in DALI by a NEMA or Zhaga connected node: 1 driver.

Integration of a degraded mode in case of a communications fault, so as to maintain the configuration saved locally in the node.

CONTROL

Synchronized astronomical clock

- On board each connected node
- Configurable by user-defined offset

Clock at fixed hours

Remote forcing

- Real-time control

MANAGEMENT

Creation of dimming scenarios:

- Up to 6 transitions
- Unlimited number of scenarios

Creation of light point groups

Management schedule

- A configurable weekly schedule
- Scenarios applied to a group of light points
- Several possible scenarios per group of light points



20,000 light points installed with NEMA and Zhaga since 2018

Solutions already present in 10 European countries: Belgium, France, Netherlands, Germany, Switzerland, Romania, Finland, Denmark, Iceland, Norway.

2 Monitoring of the light point

Communications fault

- Between communications gateways (APS - Access Point System) and connected nodes (SLC-NEMA or SLC-Zhaga)
- Between connected nodes (SLC-NEMA or SLC-Zhaga) and drivers

Light point operating fault related to

- The driver
- The LED panel

3 Transmission of consumption

SLC-NEMA:

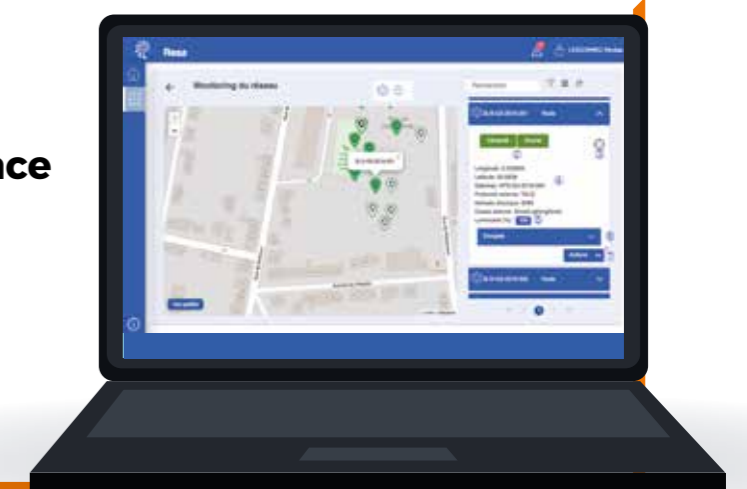
- Active power measurement
- Reading the D4i compatible driver

SLC-Zhaga:

- Reading the D4i compatible driver

Accessible and user-definable from the dedicated LX Connect web interface

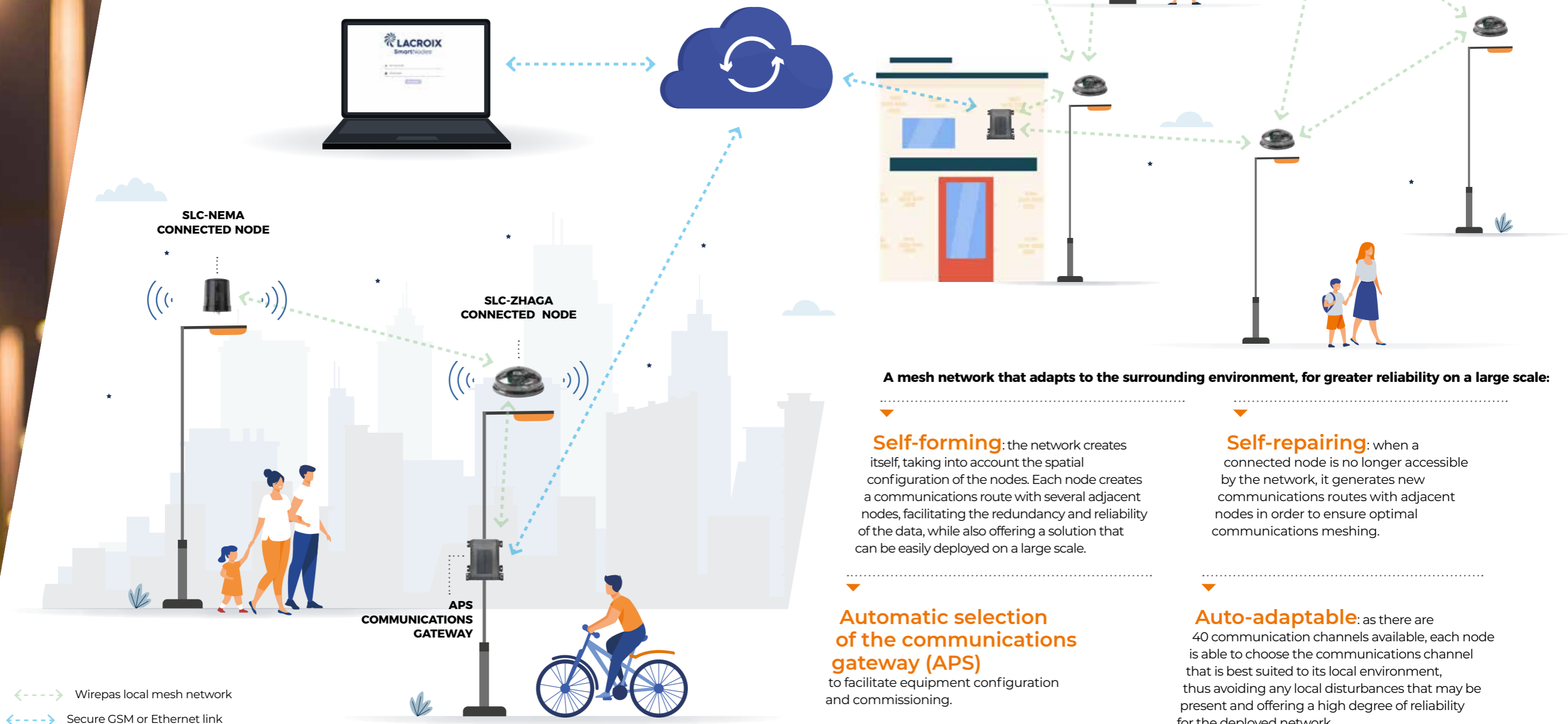
- User-friendly
- Easy to use
- Accessible 24/7
- Secure



Wirepas

A natively scalable mesh network

which can be deployed on a large scale



←- - - - -> Wirepas local mesh network
←- - - - -> Secure GSM or Ethernet link

A mesh network that adapts to the surrounding environment, for greater reliability on a large scale:

Self-forming: the network creates itself, taking into account the spatial configuration of the nodes. Each node creates a communications route with several adjacent nodes, facilitating the redundancy and reliability of the data, while also offering a solution that can be easily deployed on a large scale.

Self-repairing: when a connected node is no longer accessible by the network, it generates new communications routes with adjacent nodes in order to ensure optimal communications meshing.

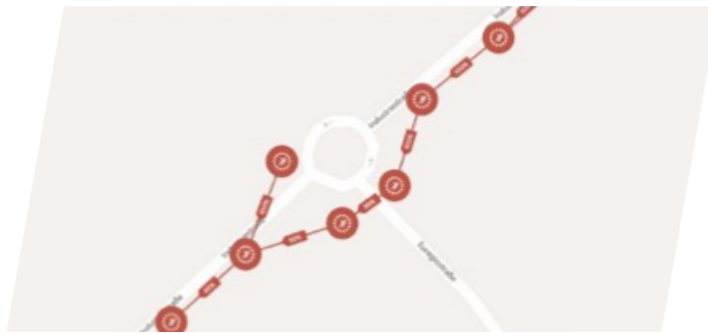
Automatic selection of the communications gateway (APS)

to facilitate equipment configuration and commissioning.

Auto-adaptable: as there are 40 communication channels available, each node is able to choose the communications channel that is best suited to its local environment, thus avoiding any local disturbances that may be present and offering a high degree of reliability for the deployed network.

The communications gateway regularly sends queries to all the connected nodes

in order to ensure the completeness of the mesh network, regardless of the size of the installed equipment.



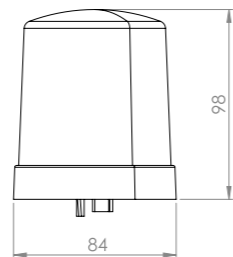
A secure, decentralized, local mesh network

- 2.4 GHz frequency
- 128-bit AES encryption + OMAC1 authentication
- 1 single point of connection to the cloud from which to access the web interface
- Up to 150 nodes supported by the communications gateway
- A cost of communication per light point with no recurrence

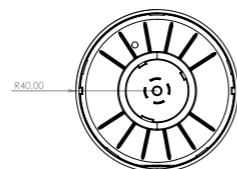
A scalable network

- Remote updating of items (Over The Air Programming - OTAP) for new features or to ready them for new uses
- The network quickly and easily integrates any new node once it is switched on and connected, for rapid and large-scale deployment. It allows integration and communication with other smart city sensors






SLC-NEMA



SLC-Zhaga



Technical details

	Connected node SLC		Communications gateway - APS		
	SLC-NEMA	SLC-Zhaga	External - GSM	In cabinet - GSM	In cabinet - Ethernet
					
Mechanical characteristics					
Housing	PBT (base) and PC (dome)	PBT (base) and PC (dome)	PC		
IP (EN 60529)	IP66	IP66	IP67		
IK (EN 62262)	IK09	IK09	IK08		
Connection type	NEMA 7-pin connector	Zhaga	Power supply cable: 2X1.5	Power supply cable: 2X1.5 2 coaxial cable outputs for antenna	Power supply cable: 2X1.5
Type of assembly	On NEMA pre-equipped light fixture	On Zhaga pre-equipped light fixture	On the post, with screws or flanges	In cabinet, on DIN rail	In cabinet, on DIN rail
Weight	600 g	75 g	550 g		
Electrical characteristics					
Power supply voltage	110 V - 240 V _{AC} / 50-60 z	12 V - 24 V _{DC}	110 V - 240 V _{AC} / 50 - 60 Hz		
Maximum relay load	1.2 kVA @240V	-	-		
Max relay current	5 A	-	-		
Rated current		25 - 80 mA			
Power consumption	0.8 W	0.6 W	3.7 W on average, 5 W when sending data		
Electrical class	Class II, double galvanic isolation		Class II		
Radio link and communication					
Mesh radio link network			Wirepas		
Frequency			2.4 GHz		
Rated power			8 dBm		
RX sensitivity			-94 dBm		
Modulation			GFSK		
Inter-node range			175 m maximum, with an empty field		
Flow			1 Mbit/s		
Network security			128-bit AES encryption + OMAC1 authentication		
Modem	-	-	compatible with 2G, 3G, 4G		
Environment					
Ambient temperature	-30°C + 70°C	-30°C + 70°C	-30°C + 52°C		
Humidity	0% - 100% RH	0% - 100% RH	0% - 100% RH		
Storage temperature	-30°C + 70°C	-40°C + 80°C	-30°C + 70°C		
Accreditation and standards					
Accreditations	CE	CE	CE		
	EN55015; EN55032; EN61000-3-2		EN55015; EN55022; EN55032; EN 61000-3-2/3		
	EN61000-4-2/3/4/5/6/11; EN3014889-1V2.1.1; EN301489-17 V3.1.1		EN61000-4-2/3/4/5/6/11		
Product standards	EN300328 V2.1.1; EN300330 V2.1.1		EN300328 V2.1.1; EN300330 V2.1.1		
	IEC 62368-1		IEC 62368-1		
	IEC 62386		IEC 62386		
Dimensions in mm					
Height	98	38.5	65		
Diameter	84	80	-		
Length	-	-	178		
Width	-	-	161		



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