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
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.

- **Synchronized astronomical clock**
  - On board each connected node
  - Configurable by user-defined offset

- **Clock at fixed hours**

- **Remote forcing**
  - Real-time control

**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
Monitoring of the light point

Transmission of consumption

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

SLC-NEMA:
- Active power measurement
- Reading the D4i compatible driver
- Accessible and user-definable from the dedicated LX Connect web interface
- Easy to use
- Accessible 24/7
- Secure

SLC-Zhaga:
- Reading the D4i compatible driver

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

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

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

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Wirepas
A natively scalable mesh network which can be deployed 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.

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

### Technical details

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#### Mechanical characteristics
- **Housing**
  - PBT (base) and PC (dome) for SLC-NEMA
  - PBT (base) and PC (dome) for SLC-Zhaga
- **IP**
  - IP66 for SLC-NEMA
  - IP66 for SLC-Zhaga
- **IK**
  - IK09 for SLC-NEMA
  - IK09 for SLC-Zhaga
- **Connection type**
  - NEMA 7-pin connector for SLC-NEMA
  - Zhaga for SLC-Zhaga
- **Type of assembly**
  - On NEMA pre-equipped light fixture for SLC-NEMA
  - On Zhaga pre-equipped light fixture for SLC-Zhaga
- **Weight**
  - 600 g for SLC-NEMA
  - 75 g for SLC-Zhaga
  - 550 g for Communications gateway

#### Electrical characteristics
- **Power supply voltage**
  - 110 V - 240 VAC / 50-60 Hz for SLC-NEMA
  - 110 V - 240 VAC / 50-60 Hz for SLC-Zhaga
  - 110 V - 240 VAC / 50-60 Hz for Communications gateway
- **Maximum relay load**
  - 12 kVA @240V for SLC-NEMA
  - 12 kVA @240V for SLC-Zhaga
  - 12 kVA @240V for Communications gateway
- **Max relay current**
  - 5 A for SLC-NEMA
  - 5 A for SLC-Zhaga
  - 5 A for Communications gateway
- **Rated current**
  - 25 - 80 mA for SLC-NEMA
  - 25 - 80 mA for SLC-Zhaga
  - 25 - 80 mA for Communications gateway
- **Power consumption**
  - 0.8 W for SLC-NEMA
  - 0.6 W for SLC-Zhaga
  - 3.7 W on average, 5 W when sending data for Communications gateway
- **Electrical class**
  - Class II, double galvanic isolation

#### 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 for SLC-NEMA
  - -30°C - 70°C for SLC-Zhaga
  - -30°C - 52°C for Communications gateway
- **Humidity**
  - 0% - 100% RH for all
- **Storage temperature**
  - -30°C - 70°C in cabinet
  - -40°C - 80°C in cabinet from the cloud interface
  - -30°C - 70°C in all

#### Accreditation and standards
- **Accreditations**
  - CE for SLC-NEMA
  - CE for SLC-Zhaga
  - CE for Communications gateway
- **Product standards**
  - EN50015, EN50322, EN61000-3-2, EN61000-4-2, EN61000-6-1 for SLC-NEMA
  - EN50015, EN50322, EN50322, EN61000-3-2/3, EN61000-4-2, EN61000-6-1 for SLC-Zhaga
  - EN50322, EN50322, EN50322, EN61000-3-2/3, EN61000-4-2, EN61000-6-1 for Communications gateway

#### Dimensions in mm
- **Height**
  - 98 for SLC-NEMA
  - 98 for SLC-Zhaga
  - 65 for Communications gateway
- **Diameter**
  - 84 for SLC-NEMA
  - 80 for SLC-Zhaga
  - 179 for Communications gateway
- **Width**
  - 84 for SLC-NEMA
  - 80 for SLC-Zhaga
  - 110 for Communications gateway