SLC-Enviro203-C

Product Description

The SLC-Enviro203-C is a smart street light controller that incorporates GPS positioning, and global cellular connectivity for LED luminaires with Zhaga connector system with air quality sensing capability.

It offers intelligent street light control and a "light on demand" solution in one highly integrated product. Communication is enabled via an automatic 2.4 GHz mesh network. With the integrated global eSIM, individual controllers can connect directly to the cloud platform without gateway.

The SLC-Enviro203-C is a D4i certified / Type A device and SR certified.

BENEFITS

- Operational cost savings through remote monitoring and real-time maintenance.
- Measure critical air quality parameters (particulate matter, VOC, NOx, humidity, and temperature).
- Display of the current luminaire status data.
- Track and evaluate your energy use.
- Remote monitoring of individual controllers without gateway (eSIM included).
- Support of DALI DT6, DT7 and DT8

FEATURES

Remote Management
The Light Management Platform provides real-time and historical data of the entire lighting network. It allows the remote management and control of all connected lighting points using a user-friendly cloud interface.

On-Site Management
The intuitive, easy-to-use configuration tool allows the on-site configuration of all parameters (i.e., dimming level etc.) for either an individual or a group of luminaires.

Mesh Network
The Communication is ensured via an automatic, organizing 2.4 GHz mesh network. Each streetlight communicates with all luminaires which can be reached.

Global Cellular Connectivity
Preinstalled eSIM for instant data connection worldwide. Protocols supported: LTE Cat M1, NB-IoT NB2, EGPRS.

Automatic GPS Positioning
The GNSS receiver provides precise, geo-located date/time data, enabling the accurate and automatic control of the lighting behavior.

AstroDim
AstroDim provides the accurate sunrise and sunset timing of the very location as a basis for the definition of the light control profiles.

Brightness Sensor
With the integrated brightness sensor, the light can be automatically switched on or off depending on the ambient light level.

Tilt Sensor
Detects X, Y, and Z-axis movements through integrated inclination sensing. Generates alerts when changes in inclination occur, such as in the event of a collision of a road user with a pole.
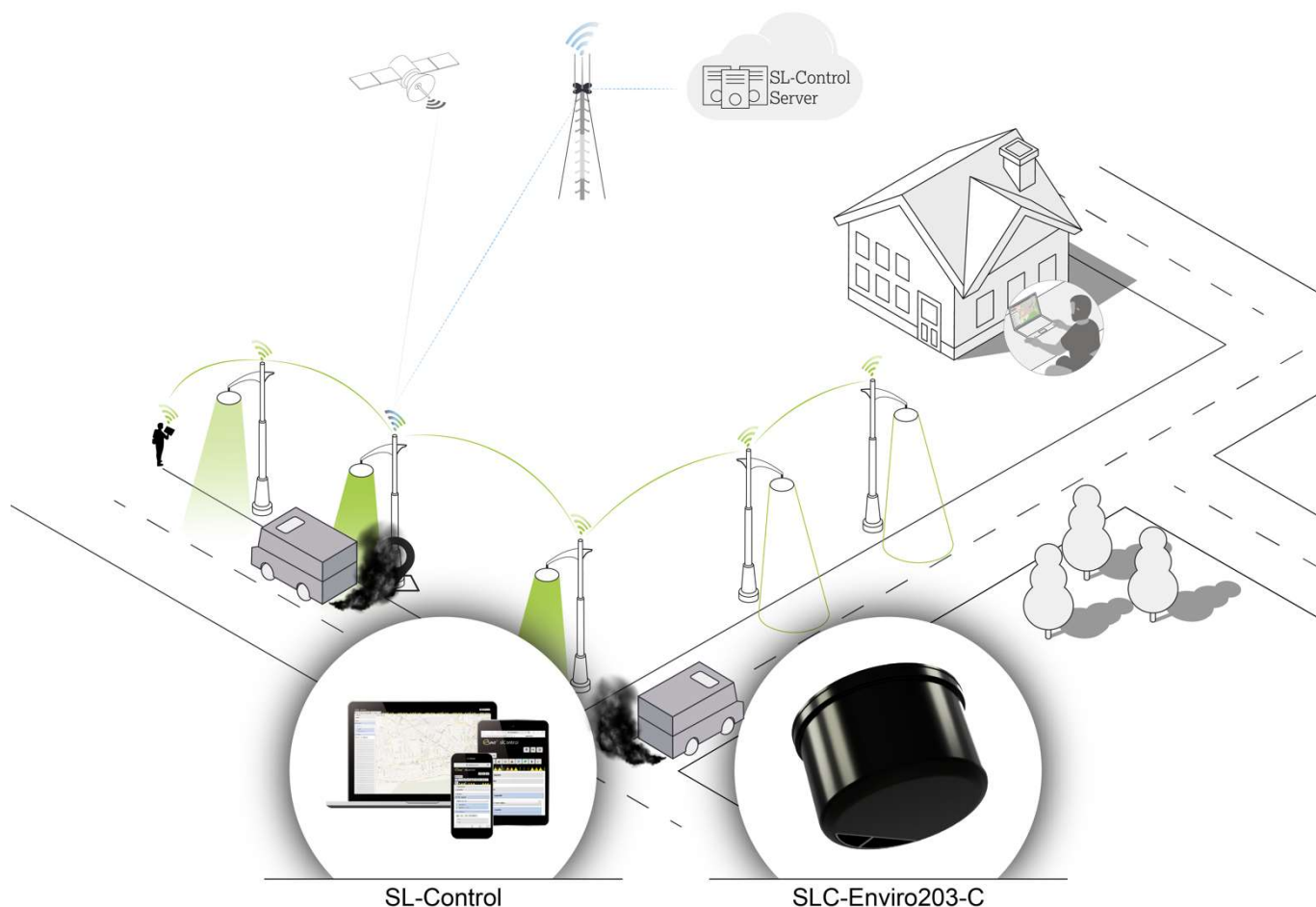
Air Quality Sensor
With the integrated air quality sensor, the air quality can be actively monitored and automatically collected.

Gateway Function
Remote monitoring of individual controllers without gateway (eSIM included).

SL-Control

SLC-Enviro203-C

Thanks to the integrated eSIM and gateway function, an SLC-Enviro203-C can establish a connection to the SL-Control web platform while maintaining a network with all other esave equipped lights within reach.
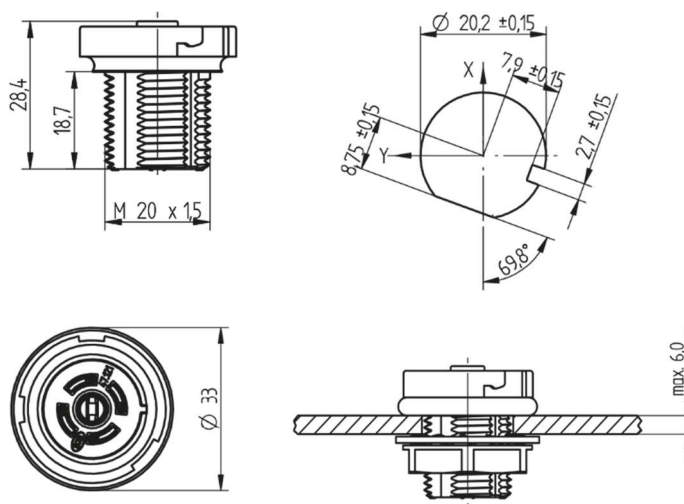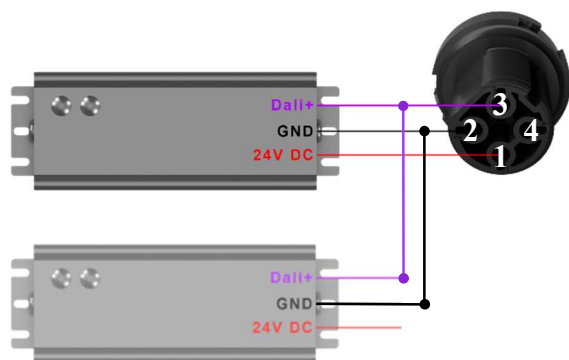
DIMENSIONS & WEIGHT

SLC-Enviro203-C
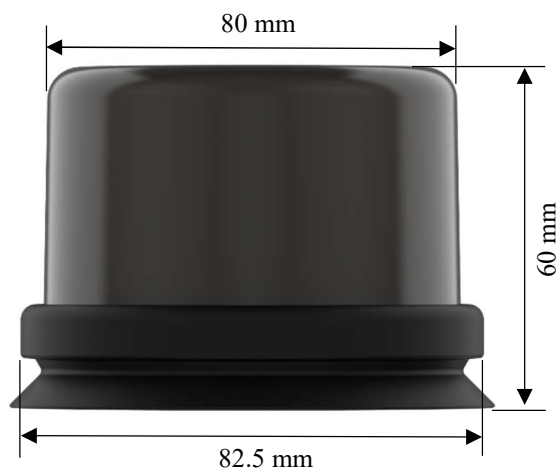
Width	82.5 mm
Dome width	80 mm
Height	60 mm
Product weight	145 g

Zhaga Connector

Outer diameter	30.0 mm
Height without plug	28.4 mm
Thread length	18.7 mm
Thread pitch	M20 x 1.5
Material	PBT
Wire size	20-16 AWG (0.5 - 1.5 mm²)
Mounting	Torque mounting nut 1.8 to 2.4 Nm using a 27 mm hex socket

WIRING

Note: The controller supports up to 4 LED Drivers simultaneously.

INSTALLATION
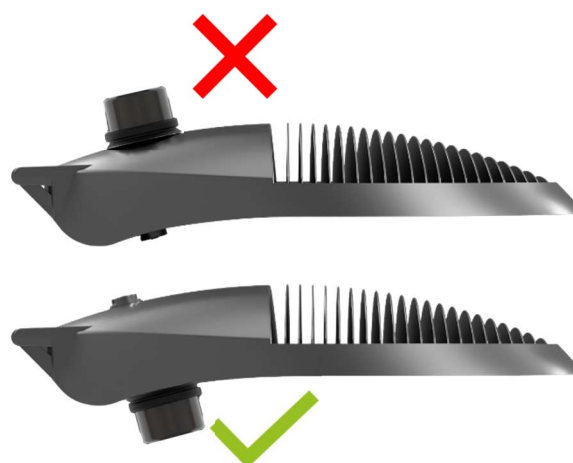
Maximum Ratings

Supply voltage	0 – 34 V DC
Current input	10 – 170 mA
Storage temperature	-40...+70 °C

Operating Characteristics

Supply voltage range	12 – 30 V DC | typ. 24 V DC
Current input (24 V DC)	12 – 24 mA
Power usage (24 V DC)	40 mW
Operating temperature	-40...+70 °C
DALI input current	max: 250 mA
Protection class	IP65

Mesh characteristics

RF frequency range	2.420 – 2.480 GHz
RF nominal output power	+8 dBm
Receiver sensitivity	-100 dBm

Cellular characteristics

|	
Protocols	LTE Cat M1, NB-IoT NB2, EGPRS
Frequency Bands (MHz)	CAT M1: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B8 NB-IoT NB2: B1/B2/B3/B4/B5/B8/B12/B13/B18/ B19/B20/B25/B28/B66/B71/B8 EGPRS: 850/900/1800/1900 MH

Air Quality Sensing

Particulate Matter	0 – 1000 ug/m^3 PM1.0, PM2.5, PM4 and PM10
VOC	0 – 500 VOC Index
NOx	0 – 500 NOx Index
Temperature	-40 – +80 °C
Humidity	0 – 90 %RH
Operating temperature	-10...+50 °C

Materials & Colors

Dome material	Polycarbonate
Dome color	Dark Gray
Body material	PBT
Body color	Grey

What does the SLC-Enviro measure and what do these indicators mean for air quality?

The SLC-Enviro 203-C measure the following air quality indicators in real time and contributes to a smarter and healthier city:
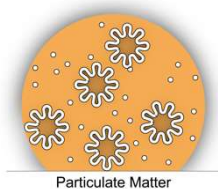

PM (Particulate Matter): An indicator of air pollution that refers to a mixture of tiny particles suspended in the air, originating from vehicle exhaust, dust, forest fires and construction activities.

VOCs (Volatile Organic Compounds): VOCs are harmful air pollutants. Gasoline and natural gas are major sources of VOCs that affect air quality.

NOx (Nitrogen Oxides): NOx is a combination of nitrogen (a major component of air) and oxygen produced at high temperatures during combustion. This occurs mainly in combustion vehicles and industrial processes.
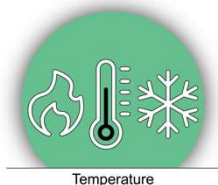
Temperature: Warmer temperatures can trap pollutants closer to the ground, leading to higher concentration and worsening air quality.

Humidity: High humidity can trap pollutants such as dust and smoke and create a hazy atmosphere.

Measurement Classification – Limited Values

PM – Particulate Matter

Level	PM2.5 [µg/m³]	PM10 [µg/m³]
Good	0 –12	0 – 20
Moderate	12 – 35	20 – 40
Unhealthy for Sensitive Groups	35 – 55	40 – 60
Unhealthy	55 – 150	60 – 150
Very Unhealthy	150 – 250	150 – 250
Hazardous	250 +	250 +

The sensor's mass concentration range of 0-1000 µg/m³ means that it can measure the amount of particulate matter (PM) in the air from zero micrograms per cubic meter up to 1000 micrograms per cubic meter. This range indicates the sensor's sensitivity and the maximum amount of PM it can accurately detect.

- **µg/m³:** stands for micrograms per cubic meter. It's a unit used to express the concentration of pollutant in the air.

- **microgram (µg):** This is a unit of mass equal to one-millionth of a gram.
- **cubic meter (m³):** This is a unit of volume equal to the space occupied by a cube with sides one meter long.

So, µg/m³ tells you how many micrograms of a substance are present in each cubic meter of air.

PM Sizes: A Breakdown of Air Pollution Particles:

- **PM1:** Particles with a diameter less than 1 micrometer (µm). PM1 is even smaller than PM2.5 and can have even deeper health impacts.

- **PM2.5:** These are even finer particles, with a diameter less than 2.5 micrometers (µm). PM2.5 exposure is linked to serious health problems like heart disease, stroke, and lung cancer.

- **PM4:** While less common than PM10 and PM2.5, PM4 refers to particles with a diameter less than 4 micrometers (µm).

- **PM10:** These are particles with a diameter less than 10 micrometers (µm). PM10 can irritate your lungs and cause coughing or wheezing.

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VOCs – Volatile Organic Compounds

Level	VOC [index]
Good	0 – 100
Moderate	100 – 300
High	300 – 500

* 0 - 500 VOC Index: The sensor measures VOC levels on a scale of 0-500. The Index describes the current VOC status in the air.

NOx – Nitrogen Oxides

Level	NOx [index]
Good	0 – 100
Moderate	100 – 300
High	300 – 500

* 0 - 500 NOx Index: A NOX Index ranging from 0 – 500 is a relative measurement of nitrogen oxides (NOx) in the air.

*NOx: is usually used to include two gases-nitric oxide (NO), which is a colorless, odorless gas and nitrogen dioxide (NO_2), which is a reddish-brown gas with a pungent odor. Nitric oxide reacts with oxygen or ozone in the air to form nitrogen dioxide.

x: "x" doesn't represent an element itself, but rather the possibility of different numbers of oxygen atoms within a molecule containing nitrogen and oxygen.

Temperature

Level	Temperatur [°C]
Cold	-10°C - 0°C
Good	0°C - 35°C
Hot	35°C - 50°C

* Temperature -10°C / -50°C: The temperature range of the sensor is -10°C to -50°C. This means it can accurately measure temperatures within this range.

Humidity

Level	Relative Humidity [% RH]
Dry	0% – 30%
Good	30% – 60%
Humid	60% – 90%

* Humidity: The operating relative humidity range is 0% – 90%, meaning it can function properly in environments with humidity levels between 0% and 90%.