# HOLOPHANE®

An Acuity Brands Company

# CONTROLUX air

## Connected Solutions
### Outdoor

# Intelligent lighting can reduce energy costs by up to 80%

CONTRO
LUX
air

# Financial Benefits

By installing Controlux Air intelligent lighting solutions, you benefit financially, thanks to energy savings and reduced energy costs.

## Energy savings of up to 80%

- By using dynamic lighting, it is possible to generate energy savings of 40-80%, depending on the usage environment.
- In industrial terrains, energy savings can reach 70-80%.
- In dense urban environments, the Controlux Air solution has the potential to generate energy savings of 40-50% (in this case, actual savings depend on the traffic intensity).

**40% – 80%**
energy savings

## Maintenance costs savings up to 50%

- Automatic failure reporting
- No need for expensive visual inspections
- Extended luminaire lifetime
- Excellent preventive maintenance

**20% – 50%**
maintenance savings

In today's fast paced and efficiency-driven environment, it is essential that your lighting scheme is carefully considered.

Lighting must comply with codes, use energy efficiently, provide a safe environment and enhance the space.

It's also one of the biggest energy expenses in your project. Efficient lighting depends on well-planned controls solutions and the lighting. We know. Lighting and controls technology are what we do.

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MARKET

# Connected solutions

Today local authorities and infrastructure operators use advanced technology to manage critical public services such as electricity supply, transportation, waste management, and public lighting. Lighting and technology will become even more interconnected, resulting in a wider adoption of intelligent management systems.

IS YOUR LIGHTING OUT
OF CONTROL?

IS YOUR LIGHTING
WASTING ENERGY?

DO YOU WANT
CONTROL WITHOUT
THE HEADACHE?

**HOLOS**Air

CONTRO
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air

EarthLIGHT

energyefficient

prismaled

## The Holophane story

For 125 years the name Holophane has enjoyed an enviable reputation throughout the world for expertise, quality and innovation in lighting. From the earliest days when the company pioneered its famous glass refractor, the Holophane name has been ever present as a leader in the field of luminaire and lighting design.

In today's environment where landscape lighting. modern architecture and public space projects predominate. the Holophane name remains synonymous with quality design, high performance, low maintenance and cost-effective lighting. Holophane offer a modern energy-efficient product range, which can satisfy a wide variety of application demands.

The product portfolio incorporates interior, amenity, street and floodlighting suitable for today's environmentally conscious world.

The use of prismatic glass refractors help break up the image of the LEDs with a PrismGlow effect. This reduces the glare normally associated with individual LEDs and eliminates hotspots on the working environment.

## Lighting Controls

There's no greater efficiency than off! A lighting system only provides maximum savings when coupled with lighting controls or stand alone systems. These systems enable a reduction in energy when the space is unoccupied or natural lighting is sufficient.

Currently available controls technology include:

• **Photocells** (Daylight Harvesting)
• **Presence Detectors**
  (Area Occupation)
• **Scene Plates** (Scene Setting)
• **Time Clock**

Holophane's controls systems give users the freedom to commission, configure and completely control their own lighting to maximise energy savings and reduce carbon emissions. The installation and initial configuration of wireless controls system is simple and at the touch of a button, controls can be altered to meet a building's changing needs.
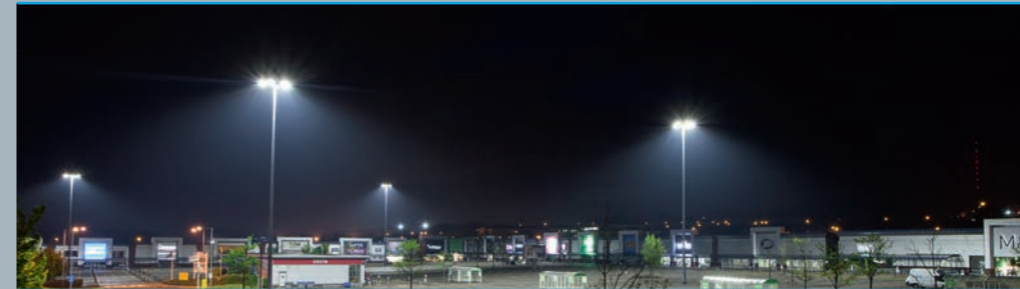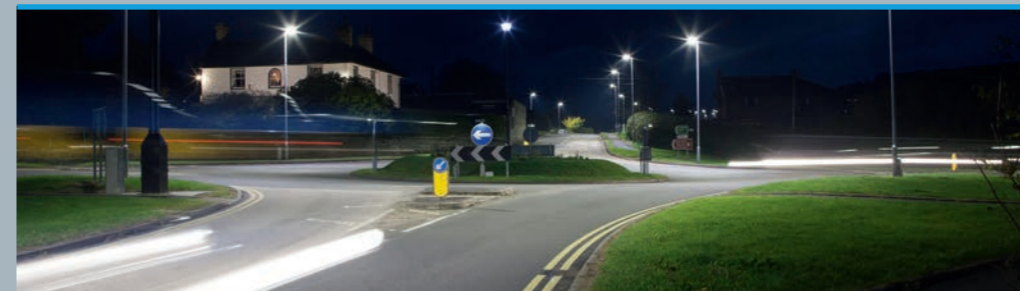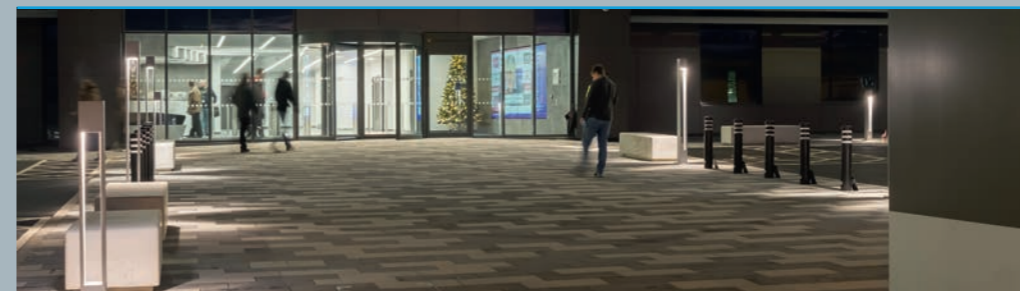
retail parks

streetlighting

business / leisure
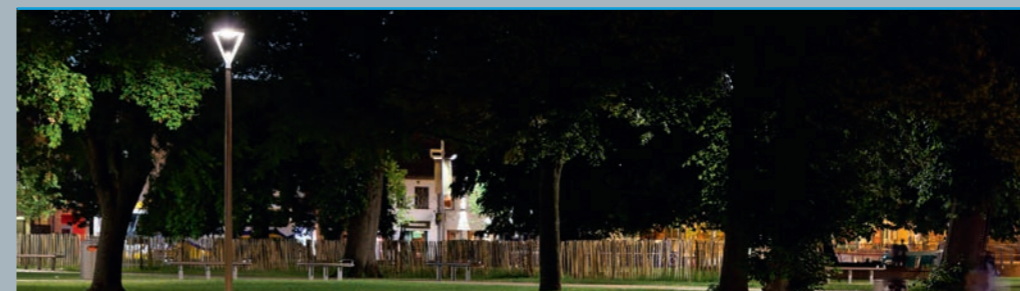
public areas

parking areas

# CONTRO LUX air

# The Customer interface

Controlux Air helps you transform your existing infrastructure into a wireless platform. With Controlux Air, you have full remote configuration or your site with an intuitive user interface which is map based and delivers accurate/update reporting.

## Wireless Controller

Wireless communication, lighting control and external sensor interface.

Zhaga D4i based node allowing communication with 'Motion Sensor' and 'Wireless Gateway'.

Creates a wireless mesh type network when used with the 'Wireless Gateway'.

Available as a standard option with code .CA, (requires .TZ01 or TZ03)

## Motion Sensor

Zhaga D4i based motion sensor which comprises of low power PIR motion sensor which will operate together with wireless controllers to form part of the controls network.

Remote version which can be mounted to building or columns is also available.

Detects pedestrians, cyclists and cars range (range: 2.5 -75 mph)

Range:
12m height. 15m radius.
4m height. 12m radius.

Available as standard option with code CAP (requires TZ03).

## Gateway

Wireless network communication, server communication (SIM-card, Ethernet, Wi-Fi). Suitable for pole, wall or inside cabinet mounting.

One Gateway required for up to 200 devices (Motion Sensors or Integrated Light Controllers) with a range of up to 1km open field range.

Links all devices to web-based Customer Interface for remote management of luminaires and devices.

This requires either a Ethernet, WiFi or GPRS connection.

## Intuitive user interface

Gain in-depth insights into every single aspect of your lighting system. Smart analytics and simple charts will help you make the right decision about your lighting infrastructure.

## Automatic failure reports

Lighting-related system faults are identified, and automatic failure reports are sent in real-time. This results in optimized maintenance, better planning, reduced costs and extended luminaire life.

## Power metering

Dedicated hardware provides precise energy metering, which is converted into detailed energy usage and savings reports.

## Accurate real-time data

Generation of analytics per an individual light point or their groups. Available data includes: notifications about lighting-related faults, number of triggers per light point, generated energy savings, heatmaps, and more.

## Map-based visualizations

Outdoor lighting points are represented in a graphic interface on Google Maps, coordinated with GPS technology, which enables you to locate, monitor and control individual light points with ease.

## Continuous support

The Customer Interface receives periodic security and feature upgrades. We do this to ensure optimum functionality and system performance.
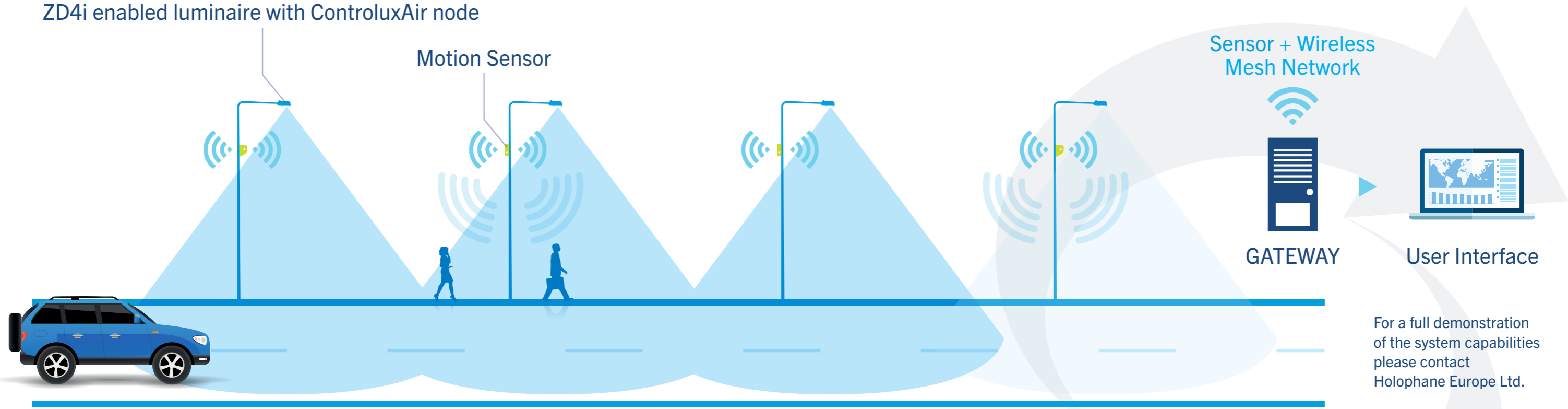
# Intelligent Lighting Architecture
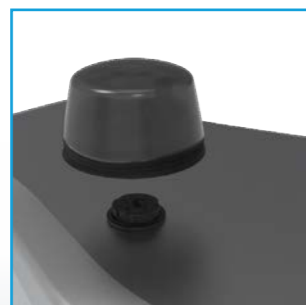## Wireless lighting control network

## Typical Installation example

ZD4i enabled luminaire with ControluxAir node

Motion Sensor

Sensor + Wireless
Mesh Network

GATEWAY        User Interface

For a full demonstration
of the system capabilities
please contact
Holophane Europe Ltd.

**Wireless Node**
Wireless communication,
lighting control node.

**Motion Sensor** triggers up
1 to 10 devices. Detects
pedestrians, cyclists and cars
range (range: 2.5 -75 mph)
Range: up to 15m on
each side, 9m front and
3m behind at a mounting
height of 5m (max).

**Gateway** that provides wireless network
and server communication to 'User
Interface'*. One Gateway required for
up to 200 devices (Motion Sensors
or Integrated Light Controllers).

* Network access is required to enable access
to CityManager (subscription based service).

# Wireless communication

## Fully wireless communication

Controlux Air offers a robust wireless communication solution that is suited for high-demand environments. The 2.4 GHz wireless self-configuring, self-healing networks use a broadband signal for optimal results in both outdoor and tunnel-like environments. The 2.4 GHz wireless networks are very stable and secure.

We support the following technologies for the Gateway-to-Server connection

- 2G/3G. Used in most projects. Requires a SIM-card (provided either by Holophane with worldwide coverage or by the customer himself with a 1GB monthly data subscription)

- Wi-Fi

- Ethernet

Wireless Sensor Network

Figure: the infographic below provides an overview of our wireless sensor network



## CONTROLUX air

case study:
**County Kerry, Ireland**

Our intelligent lighting controls have been applied to County Kerry lighting infrastructure to improve cost efficiency and achieve sustainability. The location is ideal for adaptive lighting as it has only a limited activity after 10pm. Thanks to the presence detection technology, the luminaires do not need to burn at full brightness throughout the night. Another beauty of this solution is that the luminaires do not even need to be replaced.

The system functions in a smart and unique manner. The Controlux Air sensor detects moving objects such as cars, cyclists, and pedestrians. Based on the anticipated movement, a number of luminaires function at 80% of its full capacity. When the moving object has crossed, full output is no longer needed, and the lights intelligently dim to a predefined level of 20%. The exact level of output can be configured further through Controlux lighting management dashboard. Each device can also send maintenance information and notifications of lamp failure to the Controlux Air user interface.

To find out more, visit www.holophane.co.uk

"On demand lighting is a great solution for Tralee because of limited activity during night."

**Visitor, Tralee County Kerry, Ireland**

# Security

**Safety is an all-encompassing concept that is deeply ingrained into everything we do. Controlux Air allows for better public safety in the nighttime, ensuring personal safety for each occupant. However, technical and communication security is of paramount importance as well, which is reflected in our attention to cyber security and user data protection.**

## Safe Circle of Light

Turning off the street lights completely during the night is undesired and in most cases not allowed, as it would compromise public safety and go against municipal guidelines. Instead, you should choose an intelligent lighting solution that enables dynamic on-demand dimming. As soon as sensors detect human presence, the lights brighten up to a pre-defined level.  Whether it is a pedestrian, a cyclist or a driver, they will be embraced in a safe, warm circle of light. By adopting Controlux Air, you are able to prevent the overwhelming waste of electricity that occurs when the lights burn for nobody, without decreasing the citizens' comfort.

## Safe streets and safe cities

On-demand dynamic dimming also helps you to keep track of occupancy levels and related security issues. It works like this: when you observe a sudden change in lighting levels in particular areas, you become aware of human presence there. It might alert companies to unauthorized activity taking place at their outdoor facilities, or it might simply let you know that you are not the only one on the street. Furthermore, better street lighting helps security cameras capture images of higher quality, which adds to the security benefits of our system.

## Secure Data Connection

We take customer data protection seriously. That is why all Controlux Air are highly secure. Furthermore, our in-built multilevel back-up system ensures that the lights will never completely turn off, even in an unlikely case of system failure.

# Secure Data Connection

### Unit-to-unit communication

Controlux Air controllers (OLCs) communicate with each other through a very stable 2.4 GHz wireless network that is self-configuring and self-healing. In an unlikely case of an OLC failure, the specific lamp automatically switches back to 100% brightness. Other OLCs in the network are not affected.

### Gateway-server communication

The Controlux Air Gateway is connected to the server through a Secure WebSocket (WWS Protocol RFC 6455). To guarantee integrity, we also use the OAuth 2.0 alongside the Secure Sockets Layer. This way, the Gateway communication remains secure, even when a non-encrypted connection is used. In an unlikely case of Gateway failure, all lights automatically switch on to 100% brightness.

### Server Customer Interface connection

The Customer Interface uses REST API. The OAuth 2.0 protocol is used for the communication between Customer Interface and API. The HTTPS ensures the further security of the connection. In an unlikely case of server failure or loss of connection, the Gateway and the OLCs keep operating in the defined dimming profile with no change. Remote management of light would not be possible during this period.

Controlux Air servers are hosted at TCN Data Hotels in the Netherlands. Achieving 99,9999% availability as of 2001, TCN is a renowned player in the data center market. TCN designs, builds and operates trusted 100% neutral data centers, providing the fundament of mission-critical environments. Critical components, including connections to the power grid, are at least N+1 redundant. Furthermore, the data hotel is self-sufficient: in case main power supply fails, the entire energy supply can be provided by UPS and emergency power systems. Security is given top priority, so outsiders are kept out and authorized users have controlled access inside. Physical security is on duty 24/7/365 days of the year and is supported by smart CCTV systems, electronic access systems, and a smart facilities management system.

# CONTRO LUX air

## Connected Solutions
Outdoor

HOLOPHANE®

AcuityBrands®

THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION
2017

ILP
ILP GROUP MEMBER

LIGHTING INDUSTRY ASSOCIATION