



Lighting the Way Forward

Delta LED Smart Street Lighting Solutions

Enhance city services

Increase city revenue streams

Make the most of taxpayers' money



Video introduction



Success story_Jakarta



Delta LED Smart Street Lighting Solutions

A Total Solution for Enabling Smart Cities

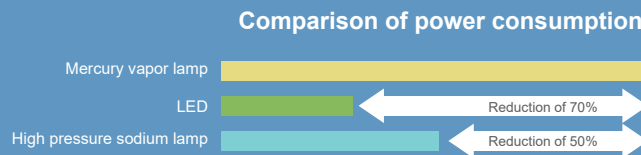


Delta is a world-recognized provider for power and thermal management solutions, with well-established expertise in most advanced control and IoT technologies. Delta is committed to offering smart, robust and reliable LED smart street lighting solutions for cities around the globe to upgrade city services and achieve their sustainable development goals.



High-Performance Street Luminaires

Leveraging Delta's high quality power driver and its expertise in thermal management, Delta street luminaires are the best choice in the market to help a city achieve its energy saving and climate mitigation goals.




Open & Secure Delta LSLink Street Lighting Control System

The Delta LSLink is an open and scalable management system for street lighting networks. With bi-directional communication, the operating status, energy consumption and possible failure of every luminaire in the city can easily be monitored and detected.



Smart Pole & Smart City Management Platform

Delta's smart pole solutions, standard or customized, can help transform the street lighting system into a city data and service hub by seamlessly integrating the following:

- Industrial power supply for outdoor application
- Surveillance 
- Motion detection sensors and license plate/facial recognition
- EV charger
- Information display
- Micro meteorological station

A smart city management platform is available to facilitate the interoperation among various smart city facilities.

High-Performance Street Luminaires

Fundal Series

The Fundal series has a full range of luminaires from 20W to 250W, with fundamental streetlight structure and clean exterior design.



Vibration resistant



Wind resistant



Park



Pathway



Roadway



Highway

Key Features

- Modularized design in optics, thermal dissipation and electrical components for easy upgrade
- Several options available, including glass, safety chain, tilt adapter, and an angle-adjustable louver
- Unique lens design with high luminaire efficiency > 145 lm/W @3000K
- Wide operating temperature range -40 ~ 60°C with long life span > 50,000 hours
- Programmable output driver current available to cover a wide wattage range with a few models
- Constant light output (CLO) and timer dimming control available
- Wireless streetlight control and streetlight installation management APP available

Safety & Quality

- Meets 3G vibration level per ANSI C136.31-2010 and grade-17 wind pressure test
- Standard 10kV common and differential mode surge protection
- Die cast aluminum with very low copper-content and high corrosive resistance

Weight

- 3.4kg for 20-70W / 5.4kg for 80-120W / 7.5kg for 130-250W



EdgePro Series

The EdgePro series features a built-in angle tilting mechanism that fits poles in a wide range of diameters.



Multiple entry



-5°~10° tilt angle



Park



Pathway



Roadway

GridLite Series

The Gridlite series is a compact LED streetlight with high lumen efficacy.



Easy to install



Park



Pathway



Roadway

Key Features

- Maximum $\varnothing 75\text{mm}$ for post-up and $\varnothing 60\text{mm}$ for side entry installation
- Adjustable mounting angle (0° , 5°) with side-entry and (-5° , 0° , 5° , 10°) post-top installation
- Power chamber opening while installation without additional tools
- Programmable output driver current available to cover a wide wattage range with a few models
- Constant light output (CLO) and timer dimming control available
- Wireless streetlight control and streetlight installation management APP available

Safety & Quality

- Meets 3G vibration level per ANSI C136.31-2010 and grade-17 wind pressure test
- Standard 10kV common and differential mode surge protection
- Die cast aluminum with very low copper-content and high corrosive resistance
- Luminaire can be installed with a safety wire rope

Weight

- 4.6kg for 20-70W

Key Features

- Tempered glass Min IK08 standard or equivalent
- Installation angle can be tilted by -15° , -10° , -5° , 0° , 5° , 10° , 15° with side entry & 0° , 5° , 10° , 15° with post top
- Luminaire can be installed with louver as required
- Easy installation without additional tools
- Light module and PSU can be quickly released from a fixture on a pole
- A valve equalizes the pressure and prevents fogging of the glass part

Safety & Quality

- Meets 3G vibration level per ANSI C136.31-2010 and grade-17 wind pressure test
- Standard 10kV common and differential mode surge protection
- A valve equalizes the pressure and prevents fogging of the glass part
- Die cast aluminum with very low copper-content and high corrosive resistance
- Luminaire can be installed with a safety wire rope

Weight

- 3.7kg for 20-70W



LSLink An open, reliable, and future-ready street lighting control solution



Supports NB-IoT/Cat-M1

Easy deployment in various environments

- By reusing retired 2G networking space or the existing 4G LTE spectrum, NB-IoT has the advantage of already working in known networking infrastructure.
- Better network coverage compared with traditional cellular
- Suitable when streetlights are distributed far apart or over a remote area



Real-time Monitoring & Control

Real-time management for quick response

- Remote on/off, dimming, and scheduling
- Power consumption monitoring identifies anomalies
- Real-time monitoring and event log for effective troubleshooting
- Automatic failure alert ensures responsiveness and quick repair



GPS Integration

Built-in GPS adds intelligence to street lighting

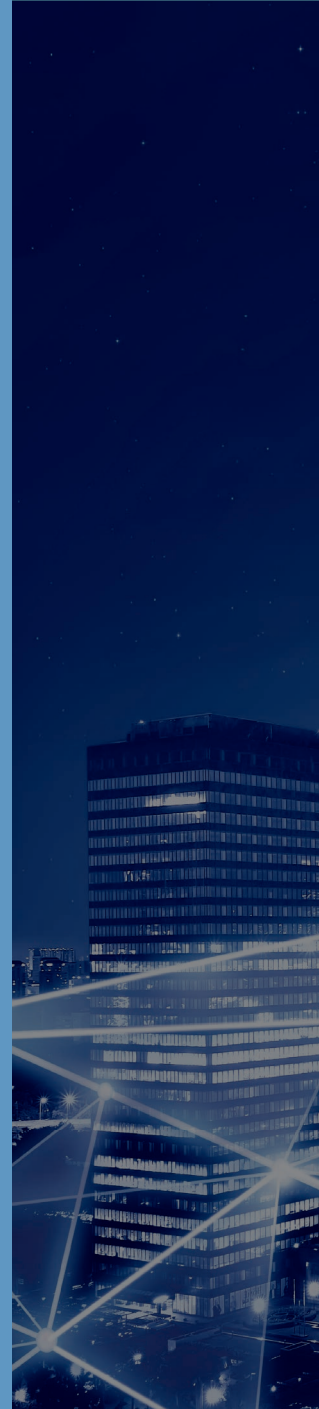
- GPS positioning for assisting in installation
- Automatic switching and dimming follows local sunlight and sunset
- Back-up streetlight control operation



Data Security

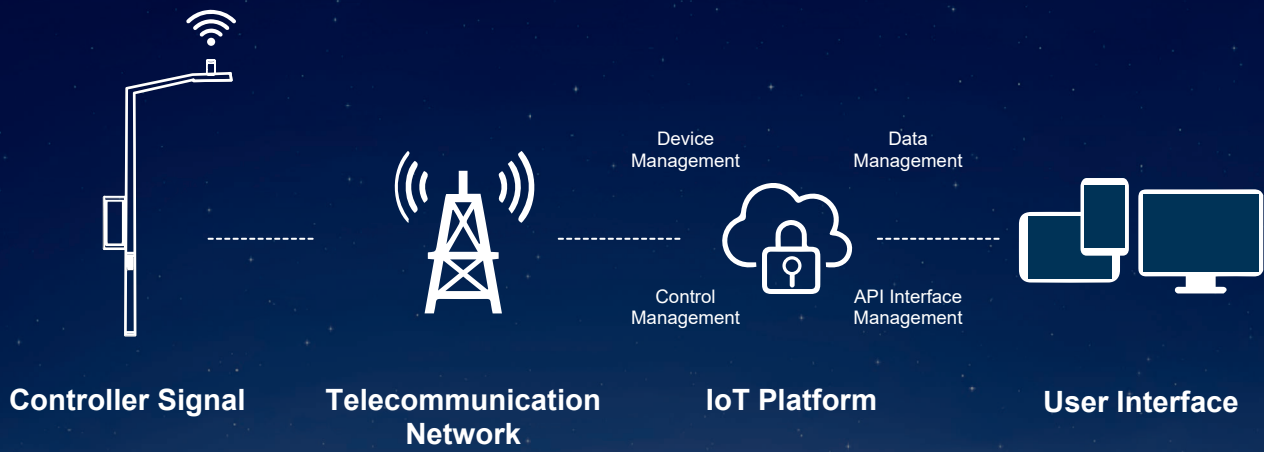
Secure data platform

- Firewall and user validation in a cloud platform
- Data encryption by AES128, MQTT TLS (SSL), and MDVP



Open architecture for system integration

- Easy integration with existing or third-party systems via a Web API
- Mobile app or web-based browser for quick commissioning and operation
- Secure web-based platform allows access to any connected device



Smart Pole & Smart City Solutions

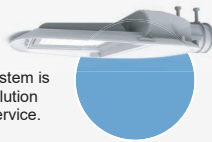
WiFi, 4/5G Access Point

Delta's Smart Pole solution supports rapid deployment of the most advanced telecommunication networks.



Smart Lighting

Delta's smart LED street lighting system is the core of the Delta Smart Pole solution to provide highly efficient lighting service.



Smart Surveillance

Delta's Smart Pole Solution has successfully integrated with a smart video surveillance solution from Vivotek, the top-ranked digital camera brand from Taiwan, to ensure traffic optimization and city security.



EV Charging

An integrative solution is also available with Delta's EV charging station, which is a future e-mobile solution developed based on Delta's over 40 years of expertise in power technologies.



Mini-weather Station

Microclimate change, including local air quality and flood level, can be closely monitored by the mini-weather station bundled with the Delta Smart Pole.



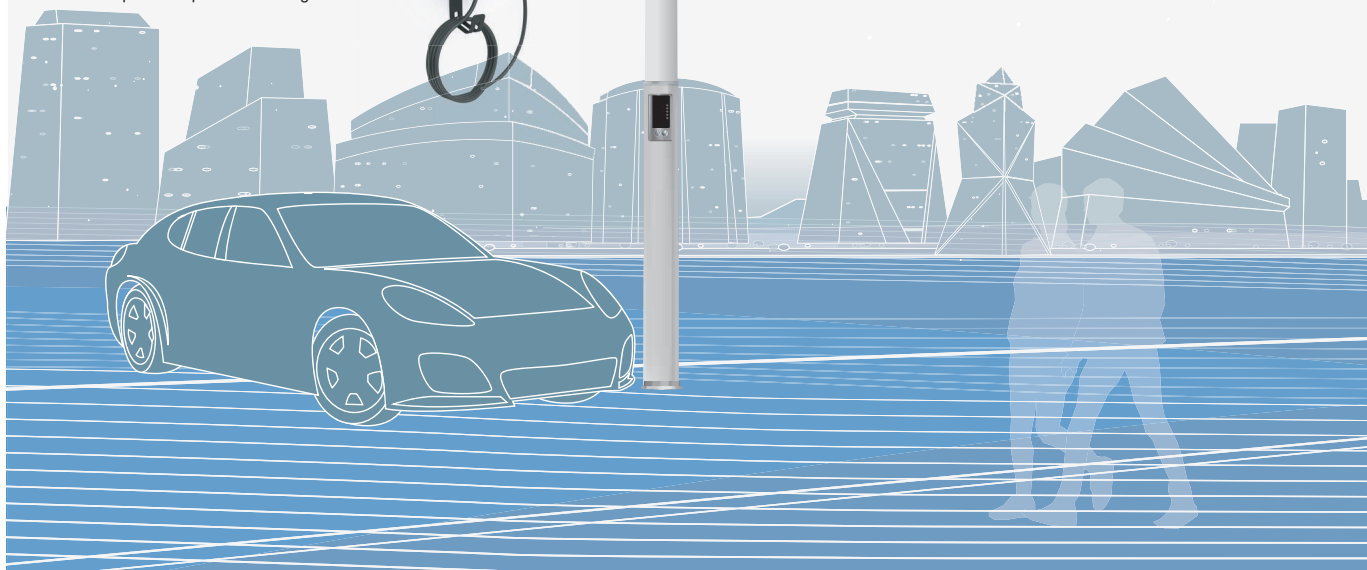
Information Display

Vivitek, also a brand of Delta, offers strong support for the Delta Smart Pole solution to digitalize messages and transform the way of interacting with the public.



Emergency Button

When there is a serious incident that requires police or ambulance services, passengers can use the emergency button for first response.



Delta provides custom-built smart poles to meet the growing demand from cities to upgrade service to their citizens. Our 100+ software/system integration engineers are committed to tailoring services for complex integration needs, in hardware and software, for city services such as street lighting system maintenance, data collection, and traffic optimization, at a smart city level.

Delta Smart Street Lighting Platform



Smart Control



Smart Maintenance



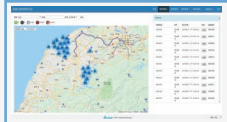
Smart Surveillance



Smart Communication



Traffic, People Tracking



Monitoring and notification



Digital Broadcasting



Data Integration



Resources Management



Linkage Settings



Reports and Analytics

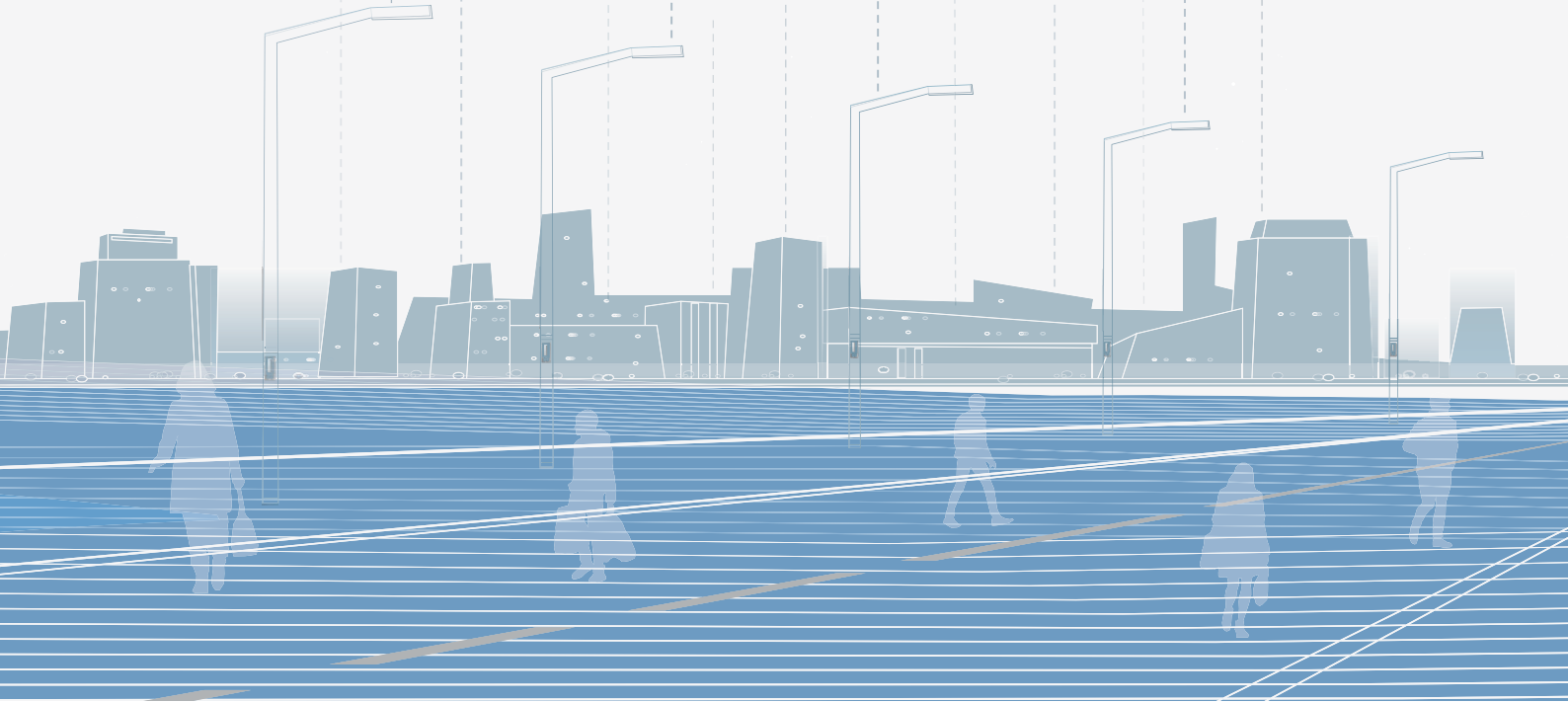


User Management



Traffic Management

GPS lte NB-IoT 5G LTE-M



Success Stories

Over 700k+ Delta LED streetlights installed worldwide

In Taiwan

Kaohsiung PFI Street Lighting Retrofit Project

Delta is one of the leading contractors in Kaohsiung City, the 3rd largest city in Taiwan. It was selected to be Kaohsiung's partner in the largest-scale, as of 2020, street lighting retrofit project in Asia.

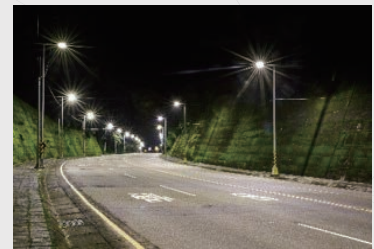
This project involves retrofits and maintenance of 240k+ streetlight units in Kaohsiung. Based on the PFI (Private Finance Initiative) principle, Delta has committed to managing the daily operation of 120k+ streetlight units for 8 years and including replacing 108k+ units of existing streetlights with LED streetlights during the very first year. This is estimated to save about 95 mln kwh electricity consumption a year, reducing 50,000 metric tons of CO2e emissions at the same time. Delta has also built an intelligent management system along with the LED streetlights to reduce the overall maintenance cost of the project.



130,000

Taipei/Keelung, Taiwan

Provides not only installation but also maintenance services for the project.



34,000

Taoyuan, Taiwan

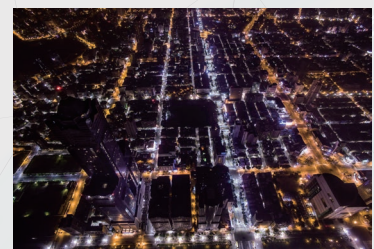
Saves NTD 17 million in urban electricity bills each year



51,000

Tainan, Taiwan

Reduces electricity cost and makes the city clean and bright.



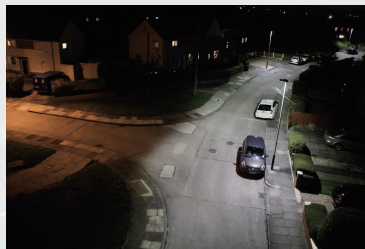
140,000

Kaohsiung, Taiwan

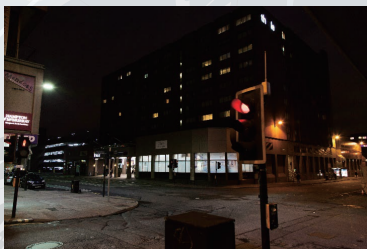
Dispatches personnel immediately to handle alerts for faulty streets.



21,000
Jakarta, Indonesia



33,000
Leicester City, England, UK



6,800
Glasgow, Scotland, UK



3,600
Transport for London, England, UK

Jakarta Smart City Initiative

Jakarta, one of the fastest-growing cities in Southeast Asia, launched its blueprint for a smart city and has moved toward becoming a low-carbon, intelligent modern city since 2014. LED smart streetlight was the first step for the planned urban transformation, which would enable the city government to reduce carbon emissions and save a lot on electricity bills, while allowing local residents to enjoy a brighter and safer environment.

Delta has participated in installing more than 20k LED smart streetlights with wireless networking functions in Jakarta. Together with the remote monitoring and control system, the new LED smart streetlights reduced the city's electricity consumption by at least 48%, compared to traditional high-pressure sodium lamps, and the real-time management and alert for device failure reduces patrol and maintenance manpower. Delta's advanced wireless networking technology also allows the streetlights to be woven into an intensive communication network and to become the solid backbone of a smart city.

Worldwide

About Delta Group

Our extensive local reach serves our worldwide customers from over 169 operation sites.

Delta's core competence is in comprehensive smart energy solutions.

We provide an experience with end-to-end services and support.

- Delta Group established in 1971, was named in the DJSI World Index for the 8th consecutive year and in the DJSI Emerging Markets Index for the 6th consecutive year.
- Delta's high-efficiency energy-saving products have helped our global customers reduce approximately 12.96 million metric tons of emissions between 2010 and 2017.
- Delta has 27 green buildings and 2 green datacenters around the world.



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