



Trellix

Infrastructure

Building Smart, Sustainable, & Secure Cities

TRELLIX Infrastructure

Cooper Lighting Solutions’ outdoor lighting network controls portfolio providing a full breadth of urban and rural control solutions for asset management and smart city enablement combining optimized functionality, scale and flexibility.

TRELLIX INFRASTRUCTURE IS IDEAL FOR:

CITIES & MUNICIPALITIES

Empower cities with smart street lighting that enhances safety and sustainability, reduces energy and crime, optimizes ambiance, and streamlines operations using analytics and urban data.

UTILITIES

Upgrade utilities with energy-saving lighting controls and real-time diagnostics, offering accurate billing and optimized asset management while boosting revenue potential.

INSTALLERS & ESCOS

Enjoy quick and reliable lighting control installations that are cost-effective, supported continuously throughout all project stages by Cooper Lighting Solutions.

OUR ADVANTAGES



ADAPTABLE

Flexible lighting solutions that guarantee a luminous cityscape at all hours, enhancing installation, operations, and light quality.



SUSTAINABLE

Environmentally friendly lighting solutions offering controlled, efficient lighting, reducing energy consumption and environmental impact.



DIGITAL

Integrating lighting with the broader IoT infrastructure to address applications beyond mere illumination, paving the way for a smarter city.



ACCESSIBLE

Easily manage systems efficiently from anywhere, addressing critical requirements on your schedule.

OUR CONNECTED LIGHTING GLOBAL FOOTPRINT:

3500+

SUCCESSFUL PROJECTS

5.2 MILLION

LIGHT POINTS CONNECTED

58+

COUNTRIES

REVOLUTIONIZING URBAN LIVING: THE BENEFITS OF TRELLIX INFRASTRUCTURE

Experience the transformative power of Trellix Infrastructure, designed to elevate the quality of life in your city, ushering in a new era of efficiency, citizen engagement, and public safety. This innovative solution integrates seamlessly with your city’s outdoor lighting and control needs, offering a wealth of benefits that make your city not only more beautiful and efficient but also more inviting and secure for its inhabitants.

JOIN THE LEAGUE OF FUTURE-READY CITIES AND ENJOY AN ARRAY OF TANGIBLE BENEFITS, UNIQUELY ACHIEVABLE THROUGH TRELLIX INFRASTRUCTURE:



SAFETY AND SECURITY

Enhance public spaces with reduced downtime and customized light control, fostering safer, secure environments.



ENHANCED SPACES

Proactive complaint resolution and improved resident satisfaction through the creation of beautiful, efficient urban spaces.



TRUSTED EXPERIENCE

Leverage our legacy of top-class lighting solutions and a network of expert advisors to meet all your project needs from concept to completion.



GLOBAL PRESENCE

Partner with the world’s leading lighting brand, offering fortified data protection and comprehensive technical and commercial support infrastructure.

TRELLIX Infrastructure

REMOTE ASSET MANAGEMENT

Gain efficiency in street lighting planning and operations using accurate asset performance and fault data, intuitive dashboards, and flexible workflow management tools while controlling street lighting scenes and schedules remotely.

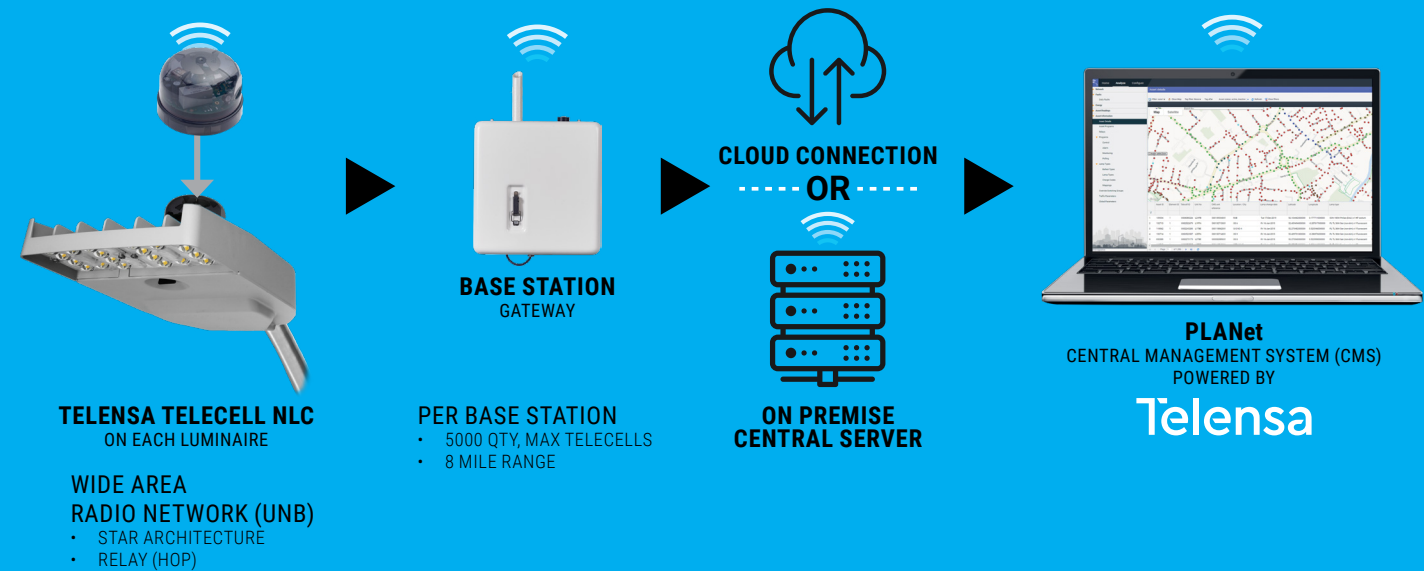
- INVENTORY MANAGEMENT:**
Manage your assets & improve performance
- BETTER OPERATION & MAINTENANCE:**
Efficient fault detection and repair
- DYNAMIC LIGHTING:**
Adjust output with dynamic dimming
- REVENUE GRADE METERING:**
Accurate real-time energy measurement
- PERFORMANCE ANALYTICS**
Power usage, fault detection, fixture tracking

ULTRA NARROW BAND (UNB) SOLUTIONS

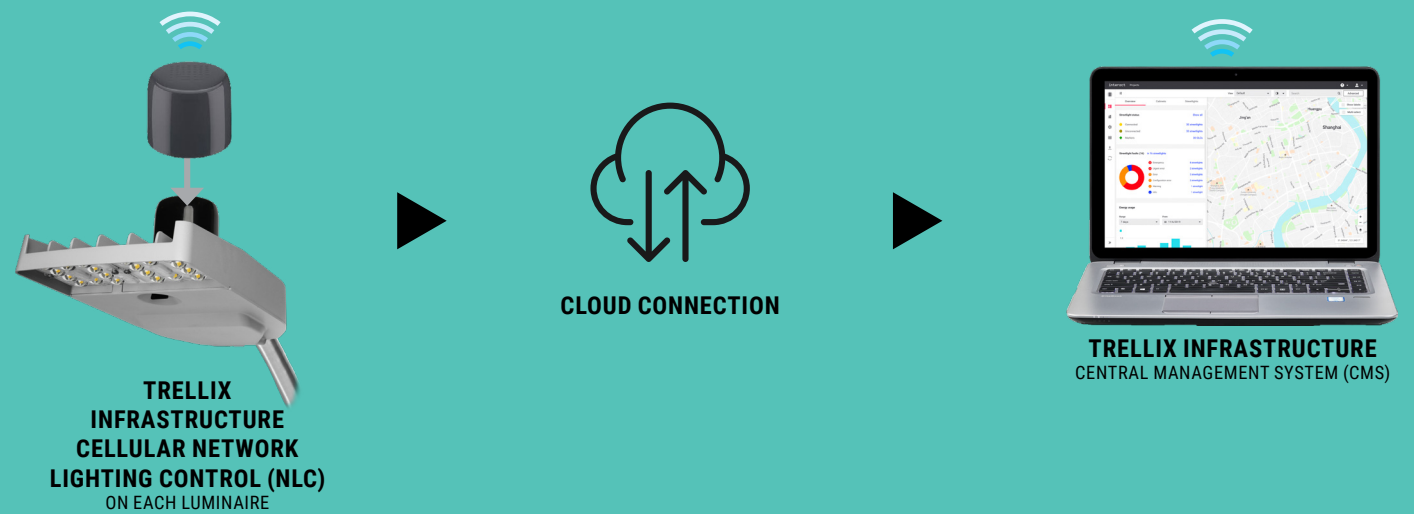
POWERED BY TELENZA



SYSTEM DIAGRAM: ULTRA NARROW BAND (UNB)



SYSTEM DIAGRAM: CELLULAR



Trellix Infrastructure Solutions Enhanced Through Industry Leading Partners



TERRAGO can be included to provide a unified view of street lighting operations and data bringing together your infrastructure customers, crews and work orders as well as the integration and simplified interface of back-office platforms.

Installation | Planning | Inventory | Maintenance | Work Orders



TRELLIX Infrastructure

SMART CITY SOLUTIONS

With Trellix Infrastructure, our connected street lighting seamlessly integrates sensors to capture vital city data on noise, traffic, emergencies, and environmental shifts. By maximizing your existing lighting infrastructure, we not only cut costs but also amplify the value and potential of every lighting deployment. Make your city smarter and more livable, effortlessly.

ADAPTIVE LIGHTING CONTROL:

Customizable system programming

ADVANCED DATA COLLECTION:

Gain insights to drive energy efficiency

SENSOR ENABLED FUNCTIONALITY:

Collect, monitor and respond to critical data

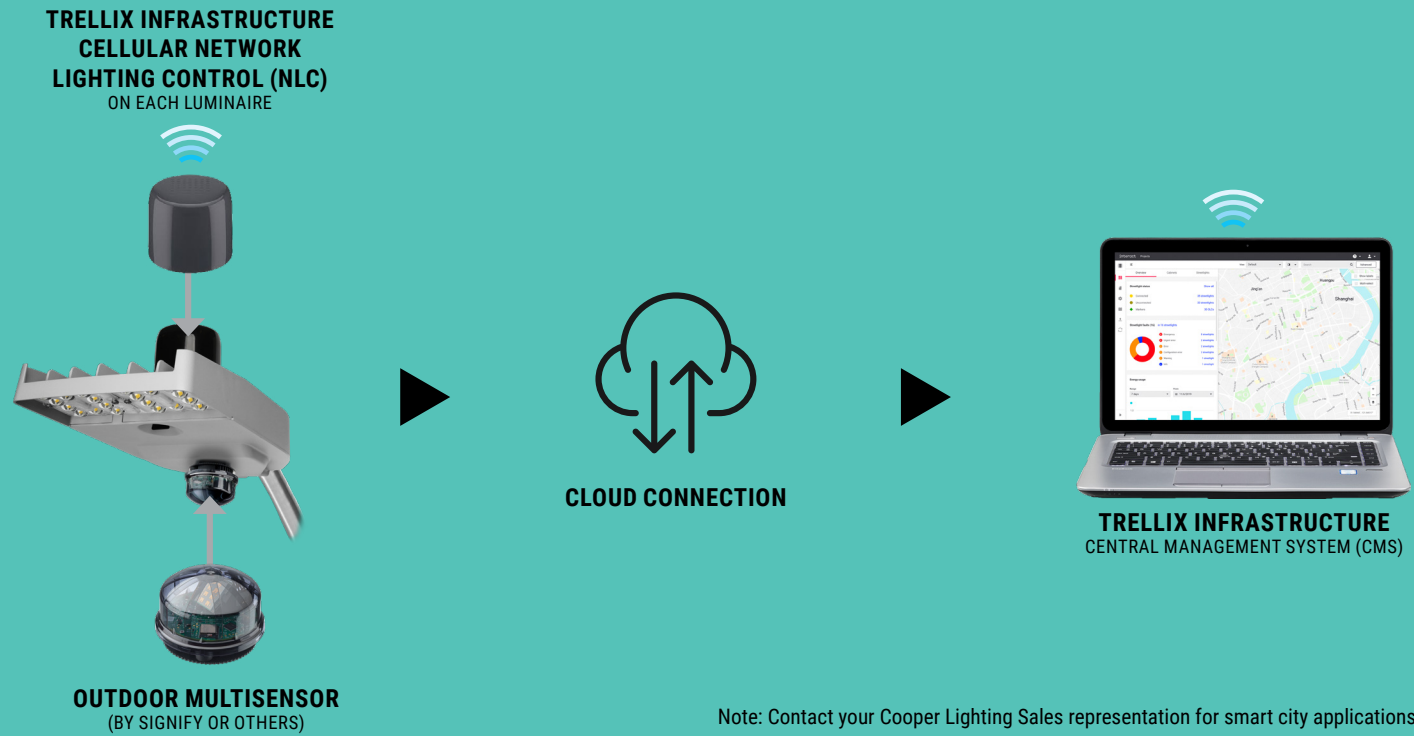
EXPANDED SYSTEM CAPABILITIES:

Improve safety, security and environmental impact while enhancing the space for patrons

CELLULAR SOLUTIONS



SYSTEM DIAGRAM: CELLULAR



SMART SENSOR SOLUTIONS

SYSTEM EXPANDABLE USING ANY SMART SENSOR.

Trellix Infrastructure offers the Philips Outdoor Multisensor which contains multiple sensing modalities in a single hardware to support different smart city applications. Smart sensor solutions when used in the advanced connected applications are only available when pairing exclusively with a Trellix Infrastructure Cellular Node and CMS.



NOISE LEVELS

TILT

AMBIENT TEMPERATURE

LIGHT DETECTION

MOTION & OCCUPANCY

PHOTO SENSING

ULTRA NARROW BAND (UNB) SYSTEM COMPONENTS

TELECELL NETWORK LIGHTING CONTROL (NLC)

- **Compact & Capable:** Discreetly sized like a regular photocell, it fits seamlessly into NEMA receptacles while conserving energy with a low power consumption of just 0.7W per device.
- **Intelligent Connectivity:** Offers resilient connectivity with a relay "hopping" function to reach difficult locations. The internal GPS locates lights in the CMS, offering a new dimension of asset management.
- **Customizable & Accurate:** Offers a full range of features including tilt sensing and revenue-grade metering with an accuracy of less than 0.5%.

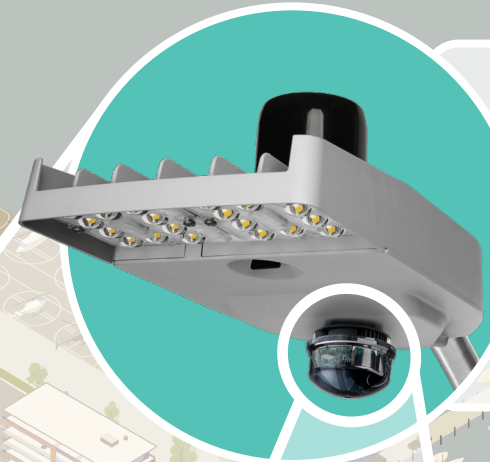
BASE STATION (GATEWAY)

- **Long Distance Connectivity:** One station supports up to 5000 light point connections within an 8-mile radius, fortified with dual SIM capability for resilient cellular backhaul and encrypted data transfer support.
- **Simple & Compliant Installation:** Easy-to-mount with flexible backhaul options, adhering to ETSI and FCC standard paths, ensuring a reliable and compliant operation.

CENTRAL MANAGEMENT SYSTEM (CMS) POWERED BY TELENESA

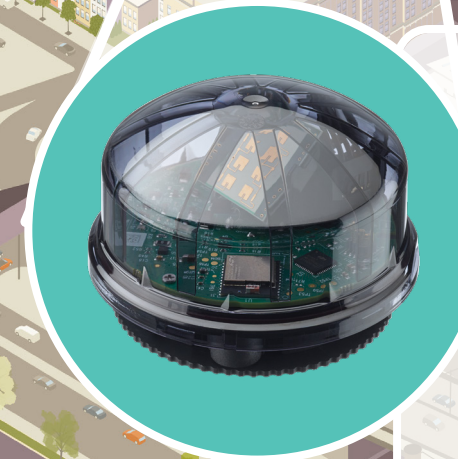
- **Intuitive User Dashboard:** Allows for customized control over various lighting conditions, supported by an adaptable programming environment that integrates easily with third-party systems.
- **Informed Operations:** Offers 24/7 fault reporting, providing detailed operational insights to streamline resource planning and enhance the efficiency of your installation.

CELLULAR SYSTEM COMPONENTS



CELLULAR NETWORK LIGHTING CONTROL (NLC)

- **Simple Integration:** Automates commissioning and data uploads once installed, with plug-and-play connectivity eliminating the need for gateways and radio system planning.
- **Seamless & Intelligent:** Serves as a beacon of integrated technology, blending a full complement of user-friendly features with advanced offerings like revenue-grade metering and tilt sensing. This cohesive system is supported by a global data plan, ready to facilitate the seamless integration of urban data and smart sensing backhaul.



OUTDOOR MULTISENSOR (TI-8135-OMS or LRI8135/00)

- **Safety & Comfort:** Uphold the well-being of citizens and the safety of road users with our versatile Outdoor Multisensor. Its multifaceted capabilities work seamlessly to foster a secure and serene urban environment. This photocell sensor is notable for its comprehensive suite of features, including its adeptness in monitoring:



NOISE LEVELS



TILT



AMBIENT TEMPERATURE



LIGHT DETECTION

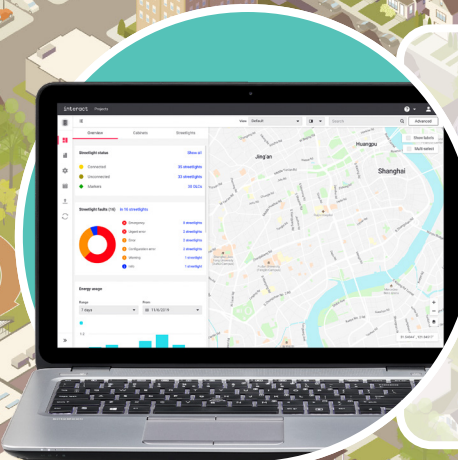


MOTION & OCCUPANCY



PHOTO SENSING

- **Intelligent Choices:** A future-proof Smart City journey begins with an intelligent luminaire. Whether incorporating the Trellix Infrastructure Outdoor Multisensor or other third-party sensors in conjunction with a Zhaga Book 18 socket and D4i equipped luminaire, Trellix Infrastructure provides a complete Network Lighting Control (NLC) offering of advanced sensor and connected lighting options. The future is now when considering Trellix Infrastructure cellular network lighting control and smart sensor technology.



CENTRAL MANAGEMENT SYSTEM (CMS)

- **User-Friendly & Insightful:** Our award-winning UI & UX, accessible across various browsers and devices, empowers customers with simple yet comprehensive control over their lighting systems. Enjoy clear, insightful visualizations of system status, encompassing fixture health, faults, and energy consumption, facilitating effortless management and optimization of your lighting environment.
- **Trusted Support:** Rely on our experienced global innovation and technology organization to guarantee smooth operations, all encompassed within a single subscription charge for nationwide coverage.

TRELLIX INFRASTRUCTURE NETWORK DETAILS: ULTRA NARROW BAND (UNB) & CELLULAR

Features	Ultra Narrow Band (UNB) Powered by Telensa	Cellular
Network Topology	Unlicensed ISM Band - Star	Licensed – Star – 4G LTE CAT M1
Network Planning	Required	Not required
Light Point Density	Cost effective based on specific plan layout	No dependency
Deployment of Light Points	Telecells provided pre-commissioned and locate best available base station location per radio plan	Simple NEMA “Plug n Play”
No. of LPs per Gateway/Base Station	Up to 5000 with max range of 8 miles	Not Applicable
Gateway Redundancy	Yes – Designed as part of network planning process	Not Applicable
Data Bandwidth	Narrow	Broad (to support sensor data backhaul)
Node Connectivity Reliability	High	High
D4i Compliance/Certification for Sensors	Yes	Yes
Auto Commissioning	Barcode scanning at site/NFC via install App	Yes
Communication Nodes Interfaces	Various options including AC NEMA, 20mm Conduit, 2-Part	AC NEMA
Tilt and Vibration sensing	Yes	Yes
Virtual Light Output, Dimming by lumens	No	Yes
Constant Light Output	Yes	Yes
Urban data backhaul and visualization (Noise, Temperature)	No	Yes
On-demand On/Off/Dim	Yes	Yes
Sensor Triggered Light on Demand	Contact Representative	Yes – D4i
Asset & Control Link APIs	Yes	Yes
Local SIM Data connectivity	Yes	No
Support On-Premise Application Server	Yes	No
TALQ V2 Certification	TALQ V2 CMS Certified	TALQ V2 Gateway Certified
Over the Air (OTA) firmware update	Yes	Yes

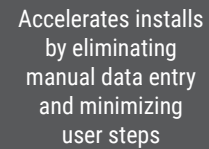
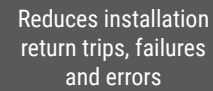
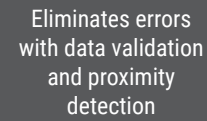
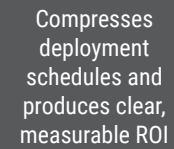
10 REASONS WHY TRELLIX INFRASTRUCTURE ULTRA NARROW BAND (UNB)

- 1. UNRIVALED EXPERIENCE** – Globally #1 in Smart street lighting with more than 2 million telecells installed.
- 2. LONG TERM PARTNER** – Recognized industry leading lighting company with 15+ years of experience deploying and managing smart street lighting systems.
- 3. COMMUNICATION TECHNOLOGY** – Ultra Narrow Band is purpose built for Smart Street lighting with low latency and long distances, with capacity to connect up to 5000 telecells to a Base station within 8-mile range, in a star topology
- 4. FEATURE & FUNCTIONS** – In addition to standard features such as asset management, reporting, faults, dimming, calendar scheduling, remote controls – special features such as Constant Light Output (CLO), trimming, polling telecells on demand, time of use energy tariff reporting, lasso, etc.
- 5. FLEXIBILITY IN OFFERINGS** – Wide range of telecells variants including NEMA, Two-Part, Post top and 480V. With on-board GPS, tilt sensing and revenue grade metering.
- 6. PLANET CMS** – A dedicated network per customer ensures stable, secure and high-speed processing.
- 7. OPEN SYSTEM** – Integrates seamlessly with third party dashboards, work order management systems via APIs and integrates third party controls via TALQ CMS.
- 8. QUALITY** – Out of more than 2 million installed telecells our failure rate is less than 0.2%, in 15+ years of operation.
- 9. VALUE DRIVEN CHOICE** – Lowest total cost of ownership covering both capital and operational expenses and suited for long term contracts, with no surprises.
- 10. EXPANDABLE** – In addition to current capabilities with APIs and traffic adaptive lighting, as customer needs evolve with respect to sensing capabilities, Trellix Infrastructure system architecture is designed with expansion in mind.

10 REASONS WHY TRELLIX INFRASTRUCTURE CELLULAR

- 1. UNRIVALED EXPERIENCE** – Globally ranked #1 in smart street lighting with 3.5 million light points installed.
- 2. LONG TERM PARTNER** – Globally #1 lighting company with 15+ years of experience deploying and managing smart street lighting systems.
- 3. COMMUNICATION TECHNOLOGY** – Cellular LTE CAT M1 provides reliable, secure and high bandwidth communication for smart street lighting and smart city applications. It's part of 3GPP MMIoT standards guaranteeing longevity.
- 4. ROBUST CONTROL NODE**– Built in GPS, Photo-cell/Astro-clock, tilt and vibration sensor, 120V and 480V offerings, revenue grade metering, D4i Type A certified
- 5. PLUG-N-PLAY** – No gateway/no network design. Flexible and faster deployment
- 6. TRELLIX INFRASTRUCTURE CMS** – Modern user interface. Offers 2 factor authentication with capability for Single Sign On (SSO)/ Active Directory (AD). Standard features include asset management, reporting, faults, dimming, calendar scheduling, remote controls.
- 7. OPEN SYSTEM** – Our Developer portal is a self-service tool that offers a full suite of REST APIs which can be integrated with third party dashboards (eg: Terrago), integrates third party controls via TALQ.
- 8. CYBER SECURITY** – Is ISO 27001 certified and IEC 62443 certified for Cybersecurity by DEKRA.
- 9. SMART CITY SENSORS READY** – Our Outdoor Multisensor is Zhaga-D4i Type B certified and offers noise monitoring, temperature monitoring, motion radar, photocell, tilt and vibration sensors all built-into one device. Urban data is backhauled via the cellular node and visualized in Trellix Infrastructure CMS
- 10. REDUCE SYSTEM COMPLEXITY** – Solving complex problems with simple solutions. Talk with our Trellix Infrastructure team to learn how you can leverage controlled and connected lighting and sensors to solve even the most advanced challenges.

TRELLIX INFRASTRUCTURE INSTALLATION AND COMMISSIONING TOOL



- Designed for outdoor lighting field workers
- Available for iOS, Android and Windows
- Speeds up install & commissioning and ensures it gets done 'right, first time'
- Scans codes to automate install & commissioning
- Eliminates errors via an automatic process
- Works fully offline when no network is available and automatically syncs when back online
- Automatically updates Trellix Infrastructure or PLANet™ CMS



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- Designed for managing lighting program key performance indicators (KPIs)
- Pre-configured dashboards for quick and easy access to KPIs with on-demand analysis to identify root causes of any issues or personnel performance problems
- Meet or exceed deployment and conversion project schedules, milestones and goals
- Manage contractors, crews and employees against goals with accurate performance data
- Export PDF and PPT reports to share progress reports with management and external stakeholders

LIGHTING BRANDS

Ametrix
AtLite
Corelite
Ephesus
Fail-Safe
HALO
HALO Commercial
Invue
iO
Iris
Lumark
LumarkAP
Lumière
McGraw-Edison
Metalux
MWS
NeoRay
Portfolio
PrentaLux - 3D Printed Lighting
RSA
Shaper
Streetworks
Sure-Lites

CONTROLS BRANDS

Greengate
Fifth Light
Intelligent Lighting Controls

CONNECTED LIGHTING SYSTEMS AND SMART SPACES PLATFORM

WaveLinx
Trellix Infrastructure