

Smart Pole for Smart City



E-Lite Semiconductor Co., Ltd.
Headquarter & Factory
Website: <http://www.elitesemicon.com>



Illuminating the Future:

Smart Poles Paving the Way for Smarter Cities

In an age where technology is reshaping our world, the concept of "smart cities" has emerged as a beacon of progress. At the heart of this transformation is the innovative smart pole technology. In this article, we will explore what smart poles are, how they contribute to smart city initiatives, their technical advantages over traditional light poles, and the benefits they bring to city management.

What is a Smart Pole?

A smart pole, at first glance, might appear no different from a conventional streetlight. However, beneath the surface, it is a multifunctional marvel. Smart poles are multifunctional poles equipped with a range of cutting-edge sensors and devices, such as surveillance camera, air quality measuring sensor, security SOS alarm, digital screens, Wifi access point, EV charger, etc. Managed by a software platform system, the smart poles integrate the versatile urban assets to serve as the backbone for a variety of smart city initiatives.

Empowering Smart Cities

Smart cities are urban centers that harness technology to enhance the quality of life for residents, drive economic growth, and improve the efficiency of public services. Smart poles are instrumental in achieving these goals. Here's how they enable smart city initiatives:

1. Connectivity Hub

Smart poles are often equipped with 5G or Wi-Fi connectivity, creating a robust network infrastructure throughout the city. This enables seamless communication between devices, vehicles, and citizens, fostering the growth of the Internet of Things (IoT) ecosystem.



2. Energy Efficiency

Traditional streetlights consume a significant amount of energy. Smart poles, on the other hand, are equipped with energy-efficient LED lighting and sensors. These sensors adjust lighting levels based on ambient conditions, reducing energy consumption and carbon footprint.

3. Environmental Sensing

Many smart poles are equipped with environmental sensors that monitor air quality, temperature, humidity, and noise levels. This data helps city officials make informed decisions about urban planning, pollution control, and public health.

4. Security Enhancement

Smart poles often include surveillance cameras and emergency call buttons, bolstering public safety. These features can be integrated with citywide security systems, enabling quicker responses to emergencies.

5. Traffic Management

Equipped with traffic cameras and sensors, smart poles aid in real-time traffic monitoring and management. This reduces congestion, enhances road safety, and promotes efficient transportation.

Technical Advantages of Smart Poles

Compared to traditional light poles, smart poles offer several technical advantages that make them indispensable in modern urban landscapes:

1. Scalability

Smart poles are designed with scalability in mind. Additional sensors and devices can be easily integrated into the existing infrastructure, allowing cities to adapt to evolving technological requirements.

2. Data Collection and Analysis

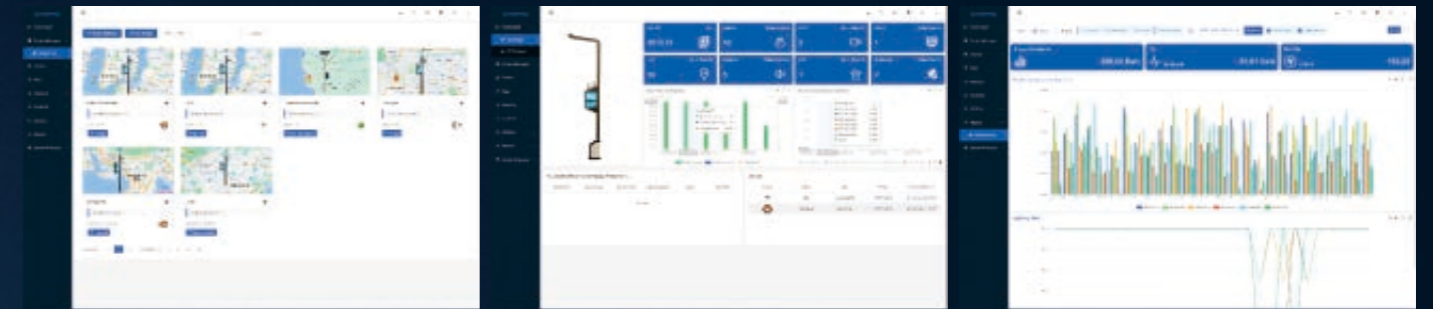
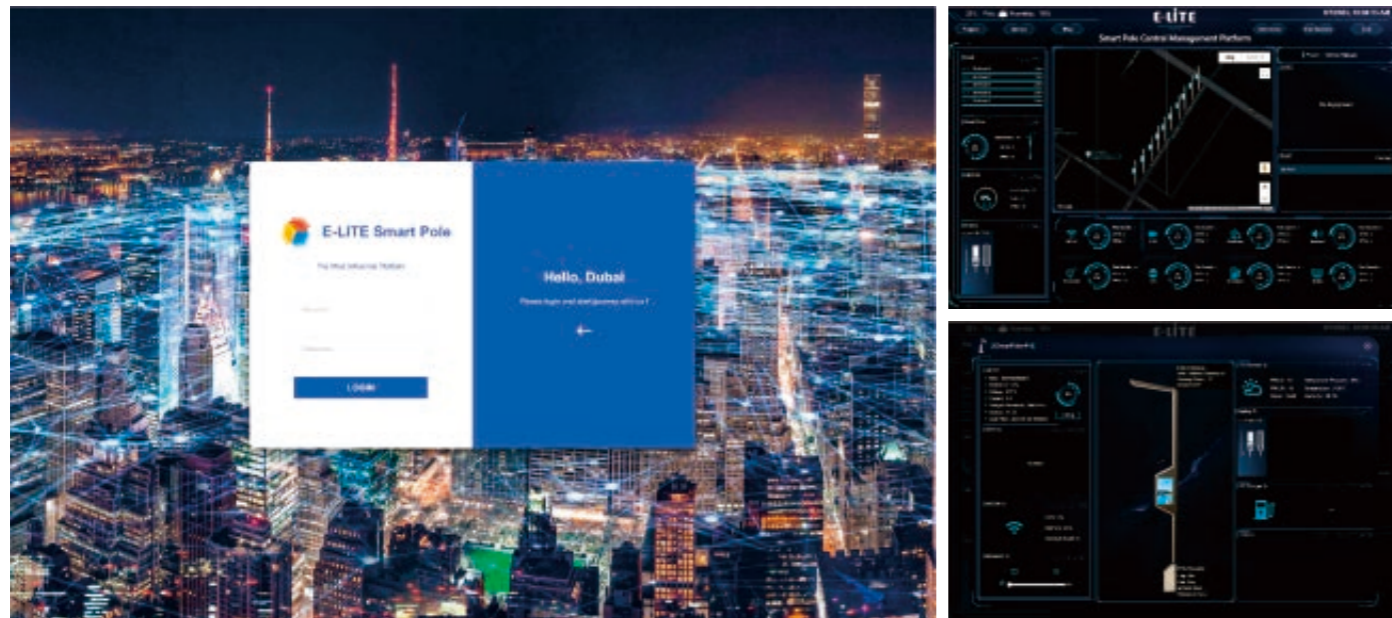
Smart poles continuously collect data from their sensors, providing valuable insights for urban planning and decision-making. This data-driven approach enhances the efficiency of city services.

3. Remote Management

Smart poles can be remotely controlled and monitored, reducing maintenance costs and downtime. City officials can adjust lighting, monitor cameras, and receive real-time updates on pole status.

4. Disaster Resilience

In times of natural disasters or emergencies, smart poles serve as critical communication nodes. They can relay vital information and coordinate disaster response efforts, contributing to the city's resilience.



Benefits for Cities and Municipalities

The adoption of smart poles brings a multitude of benefits to cities and municipalities:

1. Cost Savings

Smart poles reduce energy consumption and maintenance costs, freeing up budgetary resources for other essential services.

2. Enhanced Quality of Life

Improved lighting, reduced pollution, and efficient traffic management contribute to a safer and more pleasant urban environment.

3. Data-Driven Decision-Making

Access to real-time data allows city officials to make informed decisions, optimizing resource allocation and service delivery.

4. Economic Growth

Smart cities attract businesses and investment, stimulating economic growth and job creation.

5. Sustainable Development

Smart poles promote sustainability by reducing energy consumption and greenhouse gas emissions, aligning with environmental goals.

In conclusion, smart poles are the unsung heroes of the smart city revolution. These unassuming urban fixtures, armed with advanced technology, form the foundation of a smarter, more efficient, and sustainable urban future. As cities continue to evolve, embracing innovation through smart poles is not just a choice but a necessity to ensure a brighter, more connected, and prosperous tomorrow.

Smart Pole for Smart City

Leveraging lighting infrastructure to create safer, more resilient and enjoyable smart cities.

E-Lite brings innovative smart city solutions to the market with a connected, modular approach to smart poles that contain pre-certified hardware. By offering multiple technologies in one aesthetically pleasing column to reduce cluttering pieces of hardware, E-Lite smart poles bring an elegant touch to free-up outdoor urban spaces, completely energy-efficient yet affordable and requiring very low maintenance.

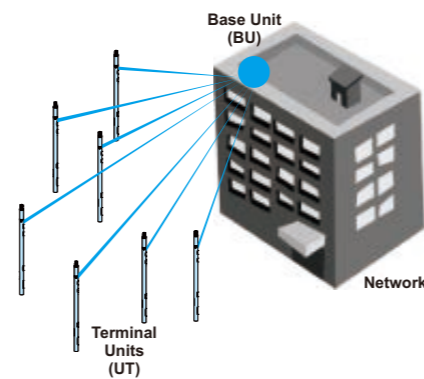
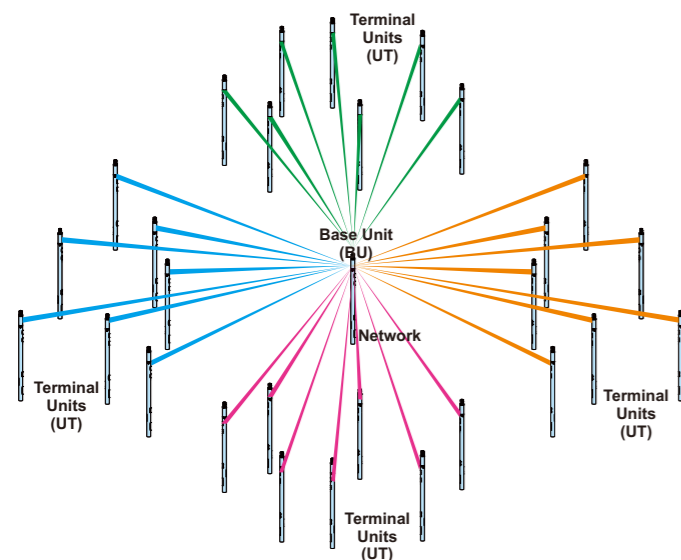
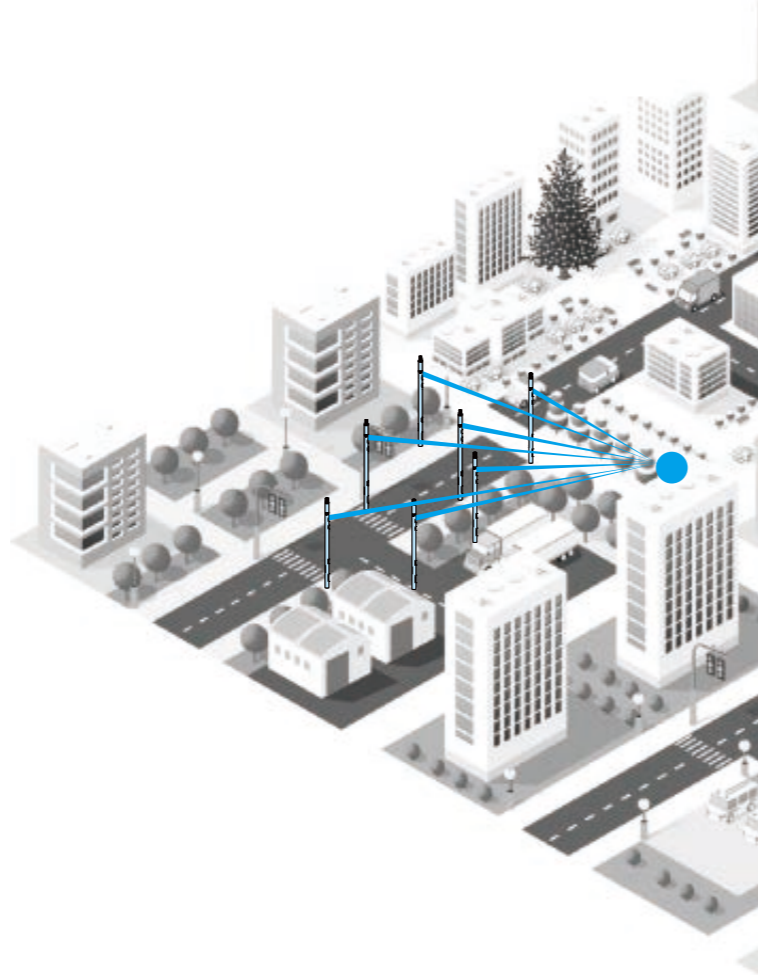


Reliable Wireless Network

Goodbye to heavy-duty infrastructure works

E-Lite's Nova smart poles provide gigabit wireless network coverage via its wireless backhaul system. One base unit pole, with Ethernet connection, supports up to 28 terminal unit poles, and/or 100 WLAN terminals within a maximum distance range of 300 meters. The base unit could be installed at any place with ready Ethernet access, thus providing reliable wireless network for terminal unit poles and WLAN terminals. Gone are the days for municipalities or communities to lay new optic fiber lines, which is disruptive and expensive.

The Nova equipped with Wireless backhaul system communicate in a 90° sector within an unobstructed line-of-sight between radios, with a range of up to 300 meters.



Security



Feeling secure is a basic human right. City residents and visitors want to feel safe at all times. E-Lite smart poles address these challenges with advanced lighting and security features by providing a combination of Surveillance Camera, loudspeaker and SOS strobe, a monitoring system that enables bidirectional communication: from authorities to citizens or security companies to people in the environment, and in the opposite way around, from end-users to public/property managers.





Mobility

The global EV forecast will reach an annual growth rate of 29 per cent achieved over the next ten years with total EV sales growing from 2.5 million vehicles in 2020 to 11.2 million vehicles in 2025, then reaching 31.1 million by 2030. Despite this growth, mainstream adoption of EVs is still hindered by an insufficient charging infrastructure in most of the countries and regions.

E-Lite smart pole with EV charger could be installed in any kind of car park to provide fast charge any time to all electrical vehicles. Cities and governments have been adopting lowemission zone (LEZ) programs as a measure to reduce ambient exposures to air pollution to improve air quality. E-Lite smart pole with EV charger is the right tool to promote low-emission zones concept, thus reduction of noise and pollution in a city.



Community

E-Lite smart pole is the right tool for business facilities, condominiums, academic, medical or sport complexes, parks, shopping malls or transport infrastructures such as airports, train or bus stations to offer a high-quality experience to their workers, customers, residents, citizens or visitors. It creates safe and pleasant places to connect people to the internet, inform and entertain them. People are encouraged to spend more time outdoors, to socialise, to contribute to the local economy and to develop a true sense of community.



Pole

E-Lite Nova Smart Pole is elegantly designed and manufactured with high grade extruded aluminum profile. It is coated with Akzo corrosive resistant polyester powder finish, providing excellent corrosion protection against the harsh elements in outdoor applications.

Key Features

- Seamless integration design
- Modern and slim appearance
- Highly corrosion resistant

Pole height	4500mm / 14.76'
Pole Diameter	200mm / 0.66'
Pole Housing	Akzo polyester powder coating
Standard color	Grey (Other color available upon request)
Ingress protection	IP 66
Impact resistance	IK 10 (polycarbonate) ,IK 05 (PMMA)
Operating temperature	-40° C up to 50° C / -40° F up to 122° F



Light 360

Key Features

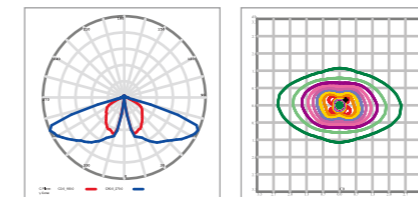
- Seamless integration in the pole
- High performance lighting level
- Dark sky
- Three different lighting distribution
- Light dimming control available as an option
- Optional NEMA-7 socket for smart city IoT control

LED	Philips Lumileds 3030 s
Power	40W
Efficacy	130LPW
Lumen	5200lm
LED color temperature (CCT)	3000K / 4000K / 5000K / 5700K /6500K
Color rendering index (CRI)	70 / 80
Input Voltage	100-277V / 100-240V AC
Cover	PC/PMMA
Upward Light	< 1%

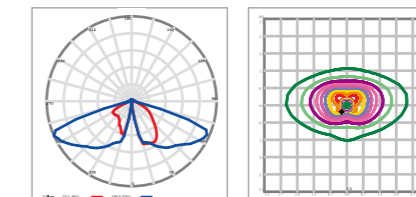


Photometrics

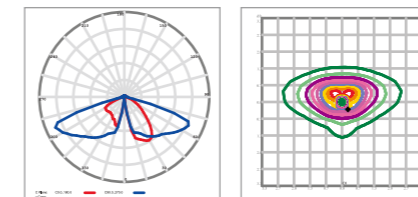
80x145° (Type I)



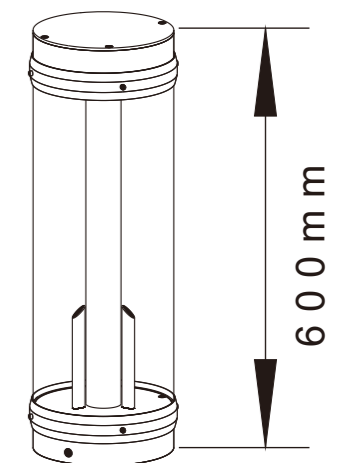
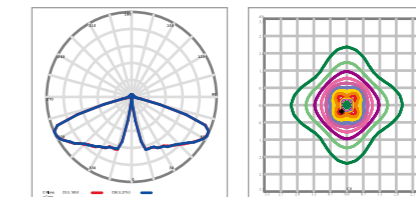
80x145° (Type II)



70x145° (Type II)



145° (Type V)



Smart Lighting Control

Key Features

- NEMA type twisted lock installation
- Automatic light on/off or dimming
- Real time operation monitoring
- Real time failure reporting
- Reliable self-healing mesh network



Elite Smart light control unit (LCU)

Receptacle NEMA 7-Pin

Protocol: IEEE 802.15.4, FR 433 / 868 Mhz / 915MHz

Output

* 0-10V dimming, 12VDC (50mA)

* On/Off or Dimming Control

* Power Metering

* Amp & Voltage Monitoring

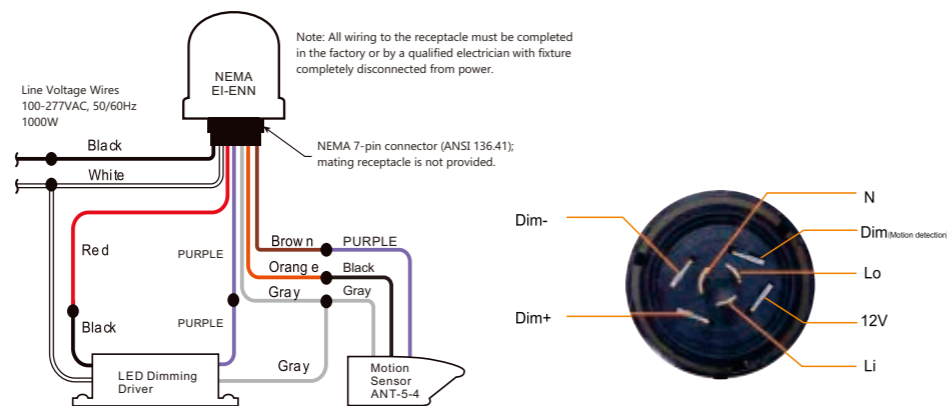
* Integral photocell control

* Lighting group/policies setting

* GPS Location

* Amp & Voltage Monitoring

* Lighting Fault alarm



Smart Lighting Control

Automatic Light On/Off & Dimming Control

- By time setting.
- On/off or dimming with motion sensor detection.
- On/off or dimming with photocell detection.

Accurate Operation & Fault Monitor

- Real-time monitor on each light's working status.
- Accurate report on fault detected.
- Provide location of fault, no patrol required.
- Collect each light's operation data, such as voltage, current, power consumption.

Extra I/O Ports for Sensor Expandability

- Environment Monitor.
- Traffic Monitor.
- Security Surveillance.
- Seismic Activities Monitor.

Reliable Mesh Network

- Self proprietary wireless control node.
- Reliable node to node, gateway to node communication.
- Up to 1000 nodes per network.
- Max. network diameter 2000m.

Easy-to-use Platform

- Easy monitor on each and all lights status.
- Support lighting policy remote set-up.
- Cloud server accessible from computer or hand held device.





Environment Monitoring

Key Features

- Ambient illuminance monitoring and recording (brightness, light color temperature, sunrise and sunset curve).
- Air quality monitoring and recording, PM2.5/PM10, CO , SO₂, O₂.
- Noise monitoring and recording.
- Wind speed & wind direction monitoring and recording.
- Temperature, humidity and atmospheric pressure monitoring and recording.

Power: 0.8W

Color: White

Humidity	0%RH~99%RH
Temperature	-40°C~+120°C
Light intensity	0 ~ 200,000 Lux
Barometric pressure	0-120Kpa
Noise	30dB~120dB
PM10 PM2.5	0-1000ug/m3



WLAN

Key Features

- WLAN Coverage
- Seamless integration in the pole
- Professional and secure wireless network
- Speed of up to 1.9 Gbps over the air
- Coverage up to 100 connections
- 300m auto-aligned range
- WPA, WPA2, WPA-PSK, WPA2-PSK encryption
- Operates in 2.4GHz band for 600Mbps, or 5GHzband for 1300Mbps
- Easy access for maintenance



Base Unit



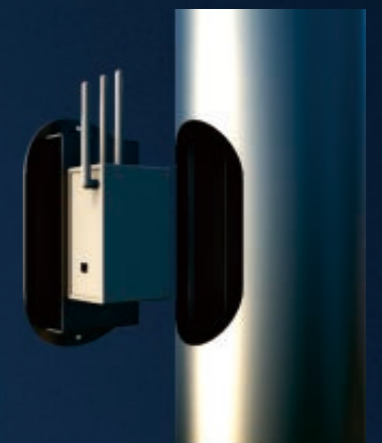
Operation temperature -40°C~75°C

External independent power amplifier

Low Noise

Wireless double-frequency 2.4GHz/5GHz

	Base Unit
Wifi coverage	Yes
Wifi throughput	Yes
Ethernet throughput	Yes
Power by PoE	Yes
Dual RF	Yes
Maximum transmission power	1300mbps
Antenna Coverage	360°
SSID	0
Operation Mode	AP/Client



Wireless Backhaul

Goodbye to heavy-duty infrastructure works

Key Features

- Reliable, virtually interference-free operations
- Connect up to 28 Terminal Unit poles from one Base Unit Pole, 7 Terminal Unit poles in 90° sector.
- Speed of up to 1.9 Gbps over the air
- 300m auto-aligned range
- WPA,WPA2, WPA-PSK, WPA2-PSK encryption
- Operates in 2.4GHz band for 600Mbps, or 5GHzband for 1300Mbps

Operation temperature -40°C~75°C

External independent power amplifier

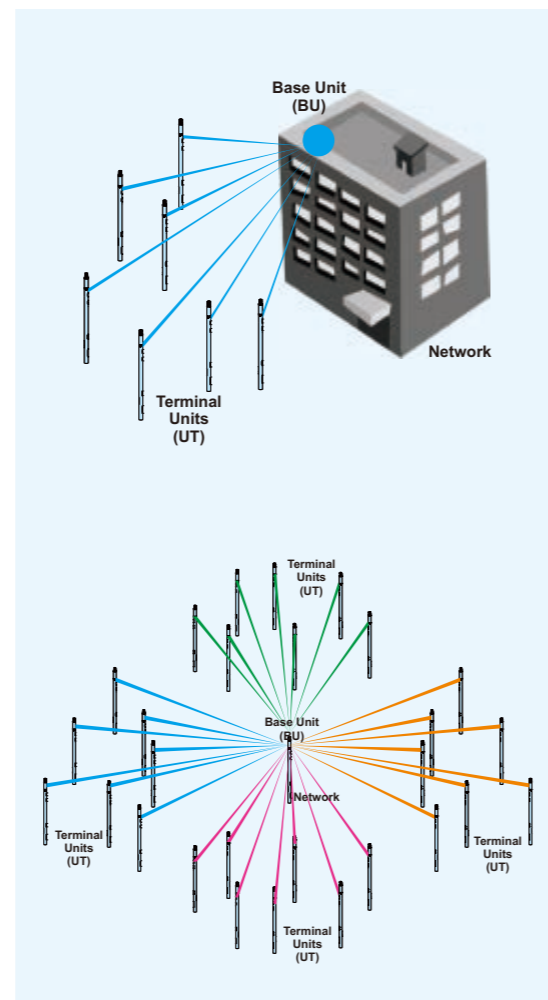
Low Noise

Wireless double-frequency 2.4GHz/5GHz



Base Unit

Terminal Unit



	Base Unit	Terminal Unit
Wifi coverage	Yes	No
Wifi throughput	Yes	Yes
Ethernet throughput	Yes	Yes
Power by PoE	Yes	No
Dual RF	Yes	Yes
Maximum transmission power	1300mbps	300mbps
Antenna Coverage	360°	360°
SSID	0	8
Operation Mode	AP/Client	Client

360°-Camera-CCTV

Key Features

- High quality imaging with 8 MP resolution
- Motorized varifocal lens for easy installation and monitoring
- Excellent low-light performance via powered-by-DarkFighter technology
- Clear imaging against strong back light due to 120 dB true WDR technology
- Focus on human and vehicle targets classification based on deep learning
- Audio and alarm interface available

Power Consumption and Current 12 VDC, 0.88 A, max. 10.5

PoE (802.3af, 36 V to 57 V), 0.35 A to 0.22 A, max. 12.5 W

Power Supply:12 VDC ± 25% PoE: 802.3af, Class 3

Image Sensor	1/1.8" Progressive Scan CMOS	Wide: D	86.0 m, O: 34.1 m, R: 17.2 m, I: 8.6 m
Min. Illumination Color	0.003 Lux @ (F1.4, AGC ON), B/W: 0 Lux with IR	Tele: D	214.0 m, O: 84.9 m, R: 42.8 m, I: 21.4 m
Shutter Speed	1/3 s to 1/100,000 s	Max. Resolution	3840 × 2160
Wide Dynamic Range	120 dB	Video Bit Rate	32 Kbps to 16 Mbps
Day & Night	IR cut filter	Ethernet Interface	1 RJ45 10 M/100 M self-adaptive Ethernet port
SNR	≥ 52 dB	On-Board Storage	Built-in micro SD slot, up to 256 GB
Angle Adjustment Pan	0° to 355°, tilt: 0° to 75°, rotate: 0° to 355°	Simultaneous Live View	Up to 6 channels
Power-off Memory	Yes	API	Open Network Video Interface (PROFILE S, PROFILE G, PROFILE T), ISAPI, SDK
2.8 to 12 mm:	horizontal FOV 108° to 46°, vertical FOV 58° to 26°, diagonal FOV 127° to 52°	Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, NTP, UPnP, SMTP, IGMP, 802.1X, QoS, IPv4, IPv6, UDP, Bonjour, SSL/TLS, PPPoE, SNMP, ARP
Face Capture	Yes		



Loudspeaker

Key Features

- Information in voice
- Professional sound system for public service announcements, warnings and music
- Automatic broadcast set-up
- Emergency broadcast.
- Adjustable sound quality up to CD 44.1K, 16bit
- Seamless integration design
- Water-proof design

Frequency range: 50-20000KHz

Sound pressure level: 91dB

Max power: 20W

Rated resistance: 8



LED Display Screen

Key Features

- Slim and light weighted
- High brightness over 4000nits for outdoor use
- Built-in automatic brightness adjustment system
- Separate PDU and single module control
- Front access with magnet module design allows easy maintenance
- Stable performance guaranteed
- Flame-retardant rating UL94 V0
- IP66 rated

Pixel Pitch 2.85mm

LED Arrangement	3 in 1 SMD
LED Wavelength	R:618-628nm/G:518-530nm/B:460-470nm
Brightness	4000nits
View Angle	160/160
Color Temperature	3500-9000K (6500K Default value)
Control Mode	gigabit ethernet, 4G, Wifi asynchronous control
Control Distance	Ethernet cable<100m or Fiber Optic<15km or 4G infinity
Operation Power	200-240V AC/ 100-277V AC
Ingress protection	IP65
Frame Dimension	515 x 1092 x 82mm
Cabinet Weight	22KG
Maintenance	Front
Cabinet Material	Aluminum

SOS-Intercom

Key Features

- One-touch system to contact operators
- Duplex speaker phone (HF) & Intelligent DSS Keys (Speed dial)
- All in ONE Radio and intercom, intelligent security function
- Seamless integration in the pole

Physical	10/100 Mbps Ethernet
IP Configuration	Static / DHCP / PPPoE
Network Access Control	802.1x
VPN	L2TP (Basic Unencrypted) / OpenVPN
VLAN	Yes
QoS	Yes
Power Supply	10~14V/1.5A DC or PoE
Shell Material	Front plate, aluminum alloy. Back plate, Cast aluminum
Protection level	IP65 and IK10
Working Temperature	-40~70°C
Storage Temperature	-40~70°C
Working Humidity	10~90%
Overall Dimension	195x120x39mm (W x H x L)
Package Dimensions	260x165x62mm (W x H x L)
Package Weight	0.85kg
Compatibility	Yes



EV Charging

Key Features

- Seamless integration in the pole
- Professional AC charging station, 7KW
- Safety locking during charging
- Safety cap ensures real safety when not charging

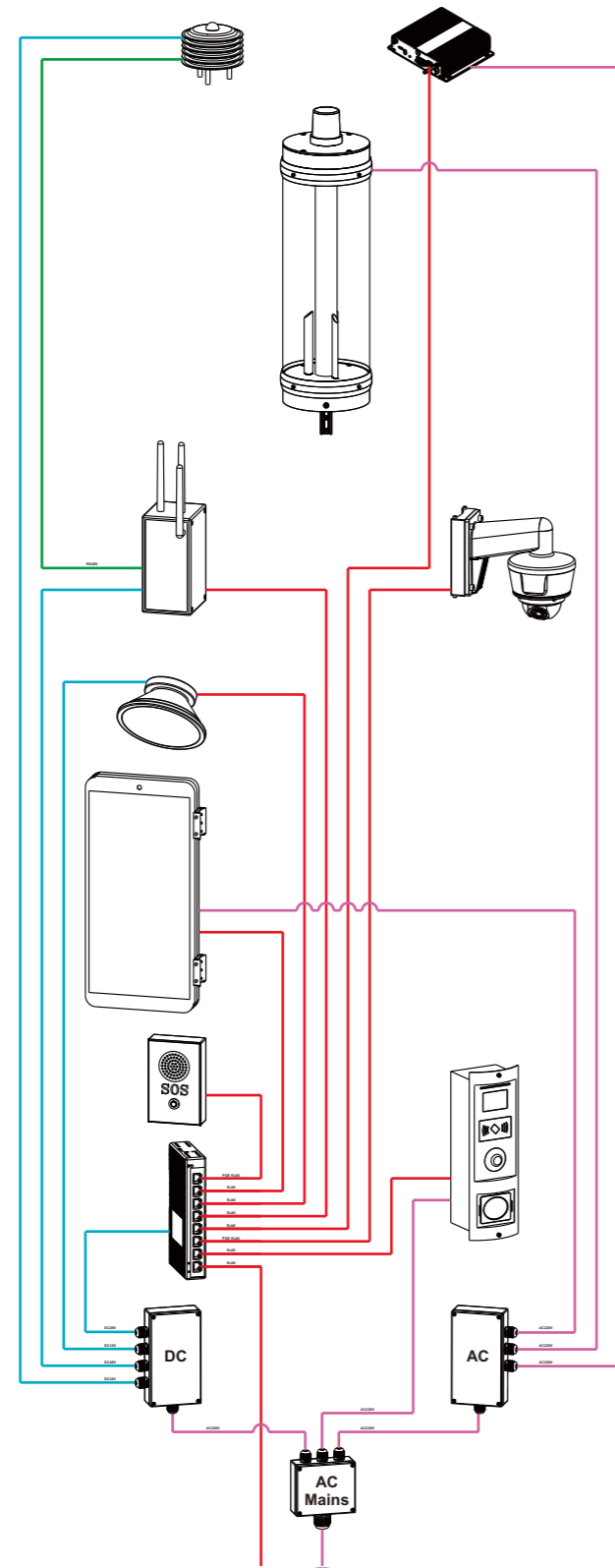
Safety Design

- Over-voltage protection
- Under-voltage protection
- Over-current protection
- Short circuit protection
- Leakage protection
- Earthing protection
- Over-temperature protection
- Low temperature protection
- Lightning protection

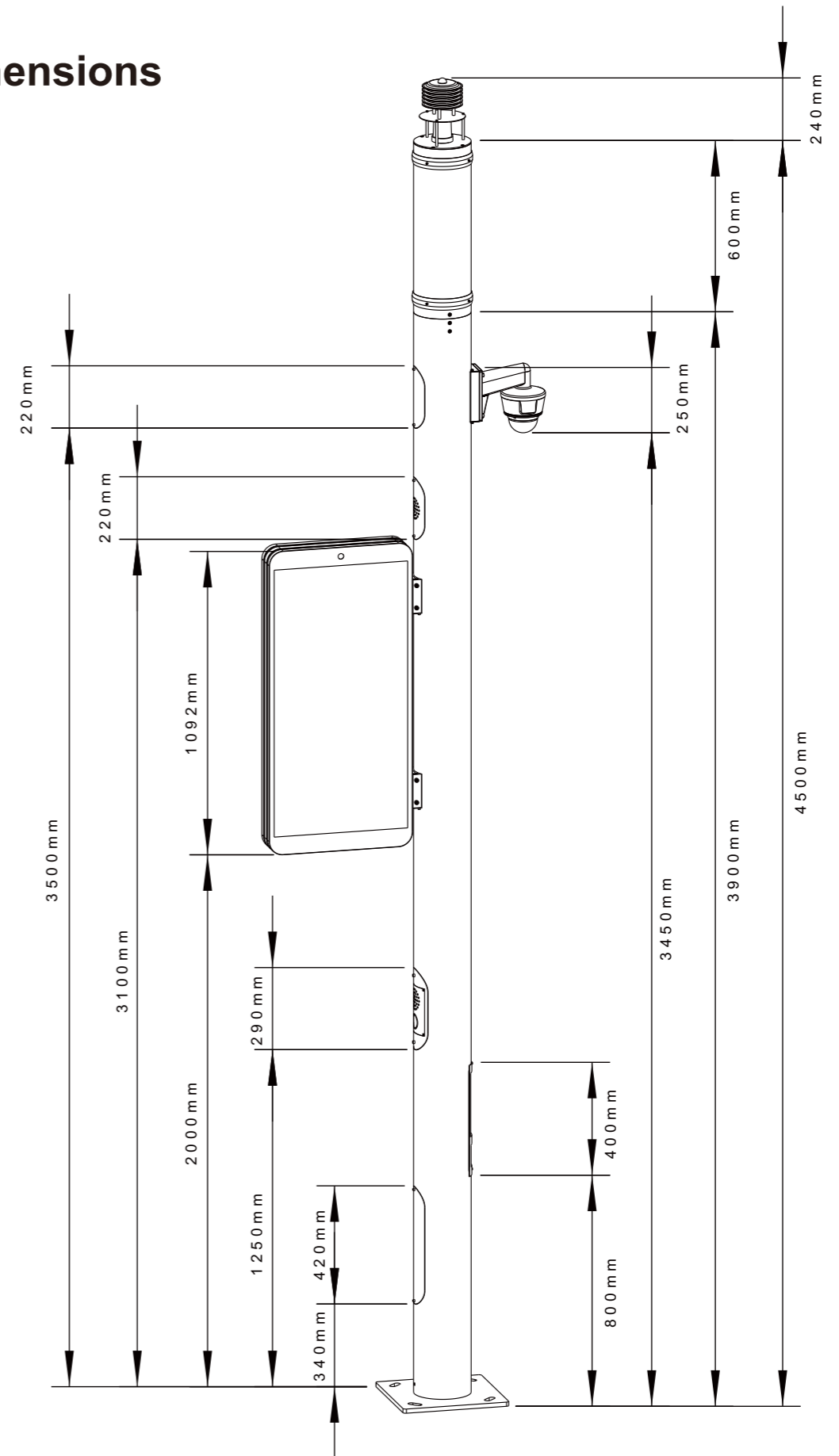
Rated Voltage (input/output)	230V AC
Max Power	7KW
Rated Current (input/output)	32A
Standby Power Consumption	< 6W
Ambient Temperature	-30° C~55° C
Ingress Protection	IP65
MTDF	50,000hours
Control	Card swipe control, CAN communication, GPRS networking



Wiring Diagram



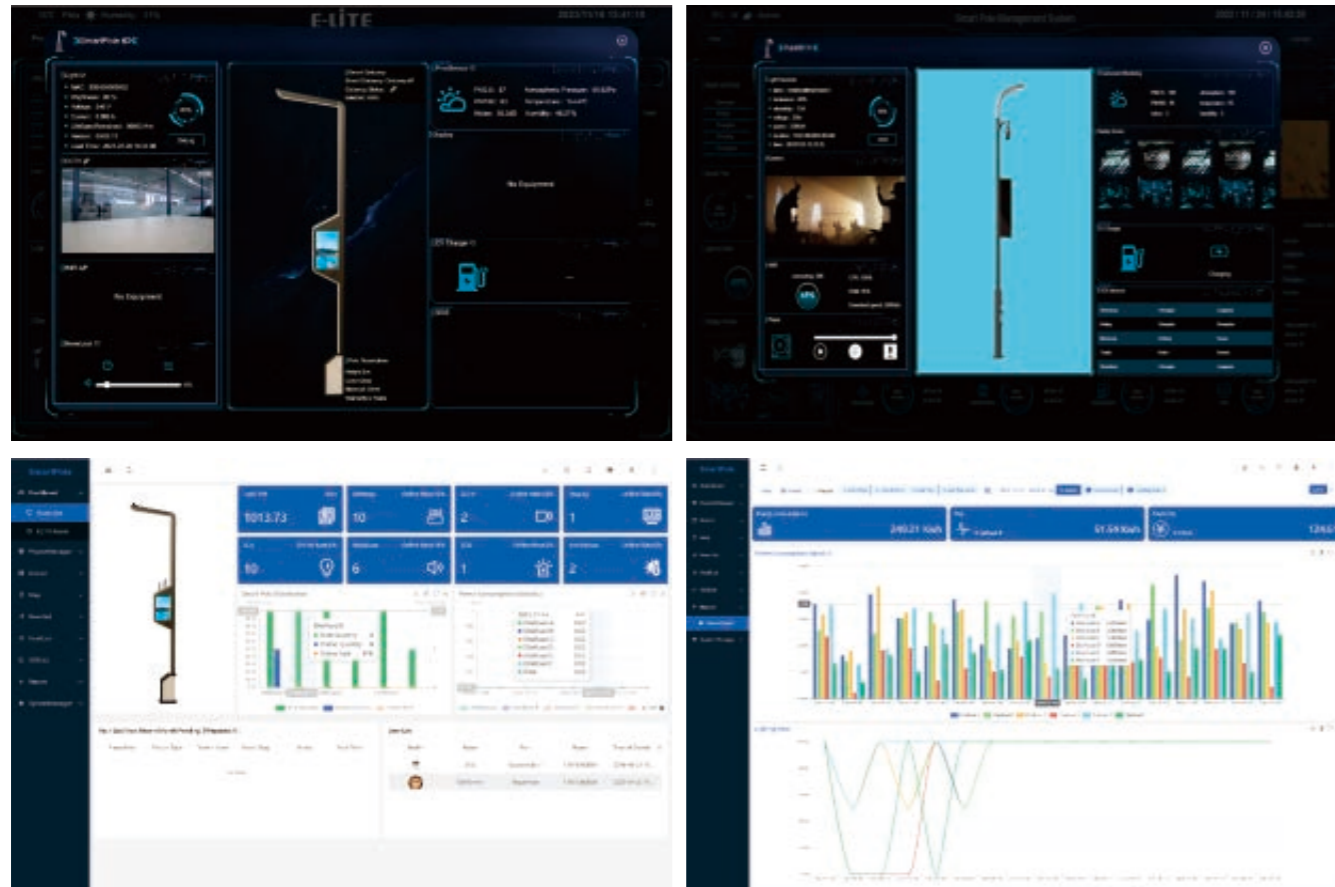
Dimensions



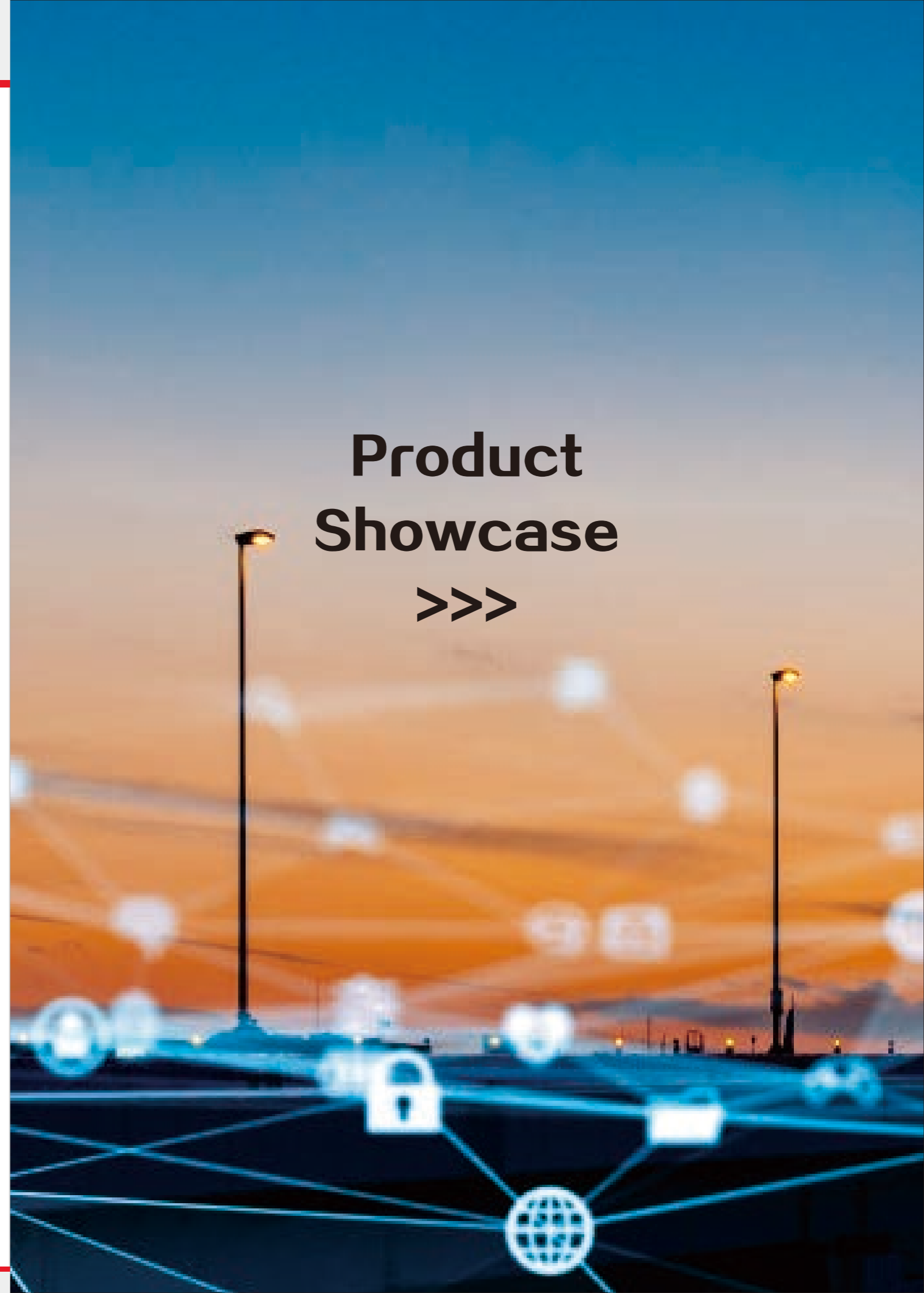


Smart Pole Central Management Platform System (CMS)

E-Lite's iNET Central Management Platform System (CMS) is a cloud based wireless smart system designated for smart pole and smart lighting management. With gateways + control node (LCU), iNET System monitors and manages the smart pole devices operation as well as lights performance status, collects operation data, controls lights on/off or dimming, and sends alarm in case of fault detected.



Product Showcase





ESIOT-SP-1002



ESIOT-SP-1003



ESIOT-SP-1004



ESIOT-SP-1005

ESIOT-SP-1006

ESIOT-SP-1007



ESIOT-SP-1009

ESIOT-SP-1010

ESIOT-SP-1011



ESIOT-SP-1012



ESIOT-SP-1013



ESIOT-SP-1014



ESIOT-SP-1015

ESIOT-SP-1016

ESIOT-SP-1017



ESIOT-SP-1018

ESIOT-SP-1019



ESIOT-SP-1020



ESIOT-SP-1021



ESIOT-SP-1022



ESIOT-SP-1023



ESIOT-SP-1024



ESIOT-SP-1025



ESIOT-SP-1026

ESIOT-SP-1027

ESIOT-SP-1028



ESIOT-SP-1029



ESIOT-SP-1030

ESIOT-SP-1031

ESIOT-SP-1032



ESIOT-SP-1033



ESIOT-SP-1034



ESIOT-SP-1035



ESIOT-SP-1036



ESIOT-SP-1037

ESIOT-SP-1038



ESIOT-SP-1039

ESIOT-SP-1040

ESIOT-SP-1041

ESIOT-SP-1042



ESIOT-SP-1043



ESIOT-SP-1044



ESIOT-SP-1045



ESIOT-SP-1046



ESIOT-SP-1047



ESIOT-SP-1048

ESIOT-SP-1049

ESIOT-SP-1050



ESIOT-SP-1051

ESIOT-SP-1052



ESIOT-SP-1053

ESIOT-SP-1054



ESIOT-SP-1055





ESIOT-SP-1056





E-Lite Semiconductor Co., Ltd.
Headquarter & Factory
Website: <http://www.elitesemicon.com>

