SMART STREET LIGHT SOLUTION
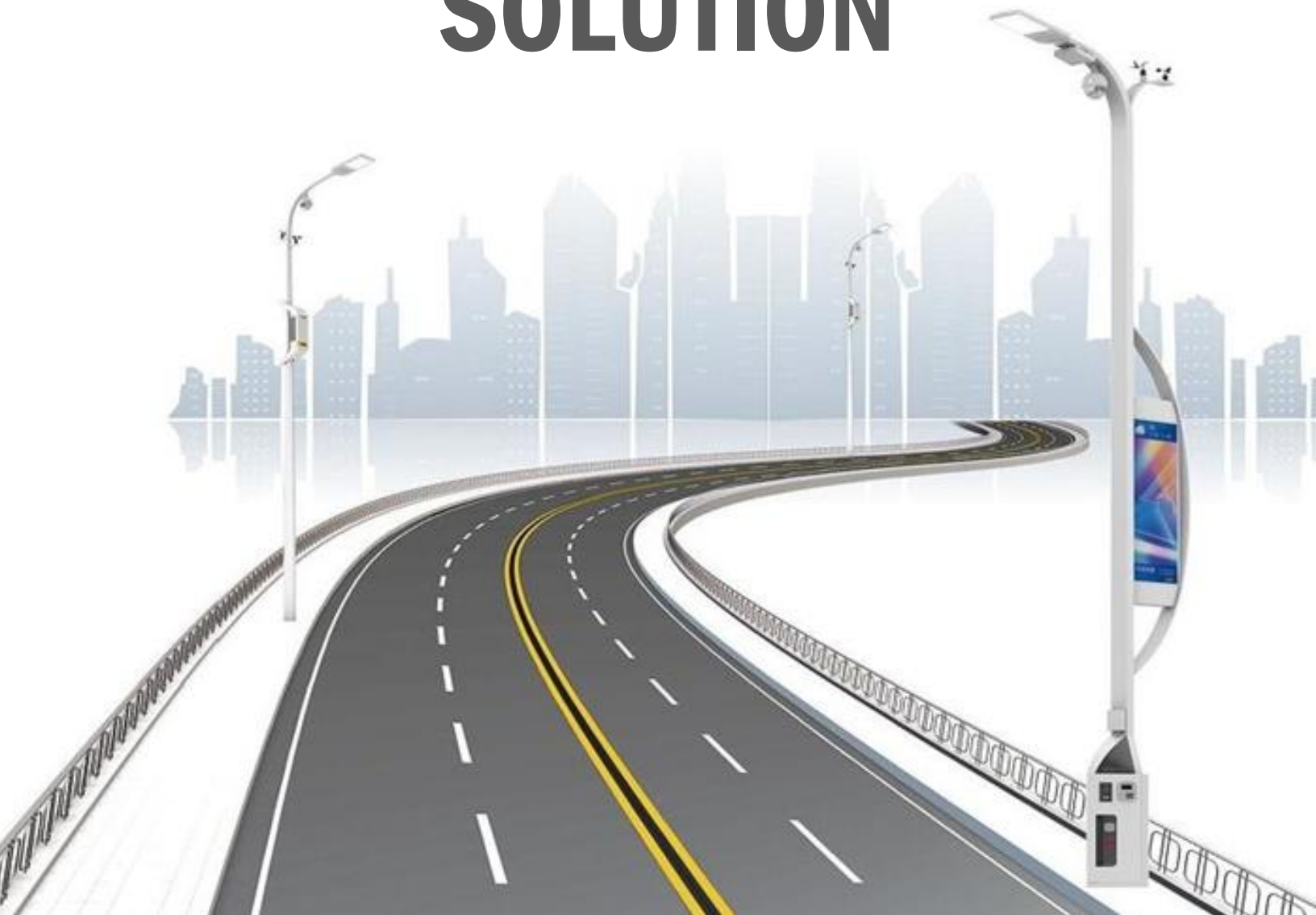
OVERVIEW

Smart LED

Sensors

LED Display

Power Charger

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FEATURES

Sensors
- Noise sensor
- Air pollution detector
- Temperature / Humidity sensor
- PE sensor

Intelligent Lighting
- Andromeda™ lighting technology
- P & V category options
- Options in CCT, power & articulation
- IP66

Video Monitoring
- Security monitoring
- Vehicle monitoring
- Pedestrian monitoring

Wireless network
- WiFi Hotspot

RFID
- Special populations monitoring
- Community security monitoring
- Special vehicle monitoring

Information Display
- Advertising
- News
- Information release
- Sensor information (weather etc.)

Emergency call
- 2-way link to monitoring center or emergency services

Charging pile
- Electric car
- Electric bicycle

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Lighting Council AUSTRALIA MEMBER

SYSTEM ARCHITECTURE
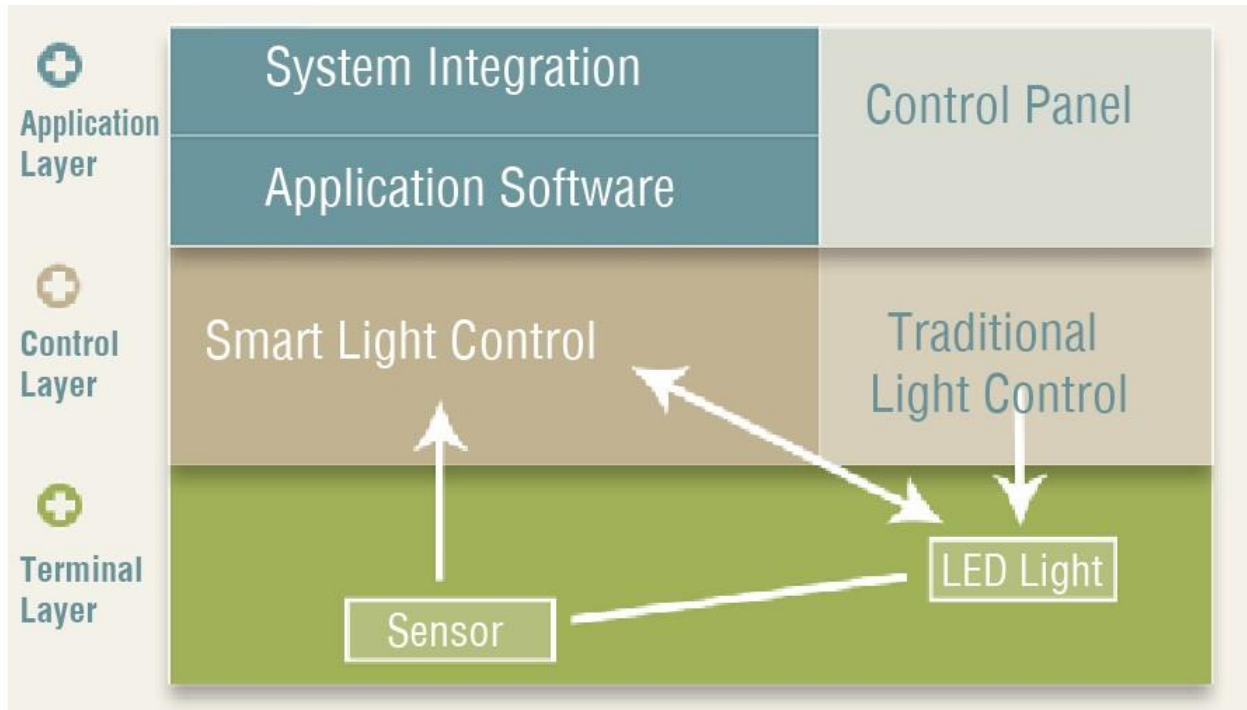
Empyrean Lighting's smart road light consists of eight application sub-systems:

- LED lighting subsystem
- LED display subsystem
- Communications and control subsystem
- Video monitoring subsystem
- RFID person/monitoring subsystem
- Environmental sensing/monitoring subsystem
- Charging pile subsystem
- Emergency call subsystem

SMART STREET LIGHT

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SYSTEM CONFIGURATION

Simplified   Standard (RFID)   Standard (Camera)

Standard (Display)   High Configuration   High Configuration

	Simplified Model	Standard Model	High Model	LED Display
Basic Configuration				
LED Street Lamp	◆	◆	◆	
Pole	◆	◆	◆	
Communication Control System	◆	◆	◆	◆
Optional Configuration				
Sensor System		★	◆	★
Camera System		★	◆	★
RFID System		★	◆	★
LED Display		★	◆	◆
Emergency Call System		★	◆	★
Charging Pile		★	★	★

Note:

- ◆ ◆ = must have items
- ◆ ★ = optional items
- ◆ System Update Supported

SYSTEM SPECIFICATIONS

Smart Lighting	Intelligent lighting Pixel cooling technology Street lamp power: 60W-250W Flux: 6000lm -25000lm Color temperature: 2300/3000/4000K/5000K Protection grade: IP66 Environment temperature: -40°C ~ + 55°C Voltage: Wide voltage input Embedded intelligent dimming module Two level energy saving.
Information Display	Pixel spacing: 3 0mm, 4 0mm Resolution: 576*192, 432*144 Brightness: >3500cd/m square Refresh rate: 960Hz's Environment temperature: -20°C ~ + 50°C
Control & Information Transmission	Intelligent system, integrated screen control, light control, information collection WIFI hotspot
Information Collection	1.3 million color outdoor camera, PTZ control Integrated environmental monitoring sensor, real-time monitoring of 5/PM2. temperature and humidity / atmospheric pressure / wind direction / noise integrated RFID reading head, equipped with RFID tag card, record municipal equipment and personnel monitoring.
Power Charging	Embedded 3.5kW electric AC charging pile Working voltage: 220AC Working current: 32A
Control Software	• Integrated intelligent lighting control, information collection, information dissemination and emergency call with other functions. • Linked control of each device • Historical data query, including light status, energy saving, environmental parameters and video data. • Automatic alarm function of various abnormal state of emergency.

SMART STREET LIGHT

Empyrean LIGHTING™

SMART LED LIGHTING OPTIONS

Andromeda Street - Small

Andromeda Park - Slimline

Andromeda Street - Large

Andromeda Park

- Wide voltage input range 85~264 VAC
- Modular architecture design supporting customization
- Light Power: (67W/93W/133W/160W/185W/226W/233W) – *Check Andromeda™ Standard catalogue for more information on powers, dimensions and weight.*
- Smart light module provides second time energy saving with integrated intelligent dimming modules.

Smart LED Lighting Specifications

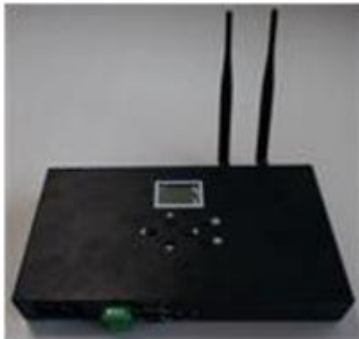| Model	Rated Wattage	Luminous Flux	Color Temperature	CRI	Protection Rating
AndromedaXPB	67W	7,370lm	4000K/5000K	≥75	IP65
	93W	10,230lm	4000K/5000K	≥75	IP65
	133W	14,630lm	4000K/5000K	≥75	IP65
	160W	17,600lm	4000K/5000K	≥75	IP65
	185W	20,350lm	4000K/5000K	≥75	IP65
	226W	24,860lm	4000K/5000K	≥75	IP65
	233W	25,630lm	4000K/5000K	≥75	IP65

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OUTDOOR LED DISPLAY

- Pixel Pitch: 3mm
- Resolution: 192 pixels (horizontal) *576 (vertical)
- Display area 1.728m x 0.576m (H) x (w) = 1 m 2
- Viewing angle: up to 120°, Non-glass lens technology.
- Brightness: $\geq$ 3500 cd/m^2, high-brightness LED technology

Outdoor P3 Full-Colour LED Display Specifications

Item	Index
Pixel Pitch	3.00mm
Brightness	$\geq 5000\text{cd/m}^2$
Viewing Angle	Horizontal : $\geq$ 120°; Vertical: $\geq$ 120°
Gray scale	Supports 256 levels of red, green, blue and after non-linear correction.
Gray scale Correction	Gray-scale technology and anti-gamma correction technology. 4096 levels of correction depth
Brightness dimming	Automatic or manual 32 level brightness adjusting
Protection Rating	IP65
Information	commercial advertising, public awareness, public information, emergency warning, regional map display, air pollution, etc.

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SMART STREET LIGHT

COMMUNICATIONS/CONTROL SUBSYSTEM

- Empyrean smart controller for light control/display control/information capture/information local processing/information transmission
- Master light is connected to Internet through 3G/4G or fiber optics to serve as a WIFI hot spot.
- 2.4G wireless communication is used between the master lights and the slave lights or the sensor nodes.

Smart Controller Specification

Item	Technical Specification
Ethernet	10M/100Mbps adaptive, standard RJ45 interface, supporting TCP/UDP
RS485	One. Default baud rate 9600 bps, support editing. Supporting 2400～115200bps
WIFI	One. 2.4 GHz, supporting IEEE 802.11 b/g/n standard Theoretical bandwidth: IEEE 802.11b/g: maximum speed up to 54 Mbps. IEEE 802.11n: maximum speed 150 Mbps
Dimming interface 2.4GHz wireless	Coverage Range Standard: IEEE 802.15.4

VIDEO MONITORING SUBSYSTEM

- Color outdoor camera with 1.3 million pixels, PTZ control
- Timed 360° image collection
- People / vehicle traffic flow monitoring
- Security monitor camera transmits the video/image information directly to the server.

Outdoor Camera Specification

Item	Technical Specification
Pixel	> 1.3 mega pixel
Horizontal Range	360° continuous rotation
Vertical Range	-15° to 90° (auto inversion)
Scanning	PTZ manually scan / preset points scan/cruise scan/auto-scan/timing track scan
Protection Rating	IP66

RFID MONITORING SUBSYSTEM

The RFID reader can read multiple RFID active tags:
- Security card tab for real-time monitoring of particular groups such as the infirmed, elderly, children and security card labels can even be used for pet monitoring
- Asset tag for municipal equipment real-time monitoring, including the manhole cover monitoring, trash cans monitoring, car/bike monitoring.

RFID Reader Specification

Item	Technical Specification
Transmission Rate	1MB
Receiving Sensitivity	≤ -90dBm
Effective Distance	0～50 m
Anti-jamming	Channel separation technology. Multiple devices/tags not interfering
MTBF	≥ 70000 hours

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SENSING MONITORING SUBSYSTEM

- Integrated environmental monitoring sensors providing real-time information on PM 2.5/temperature/humidity/barometric pressure/wind speed/wind direction/noise.
- The environment information can be displayed on the LED screen.
- The information will be transmitted to "Empyrean Lighting's Smart Lighting System" servers for further processing archiving.

| Noise Sensor | Environmental Sensor | Light Sensor | Wind Speed Sensor | Wind Direction Sensor |

Environmental Sensor Specifications

Item	Technical Specification
Noise Monitoring tolerance	GB/T3785-2
Temperature Detection tolerance	± 0.5℃
Humidity Test tolerance	± 3%RH
PM2.5 Detection tolerance	± 15μg/m3
Wind Speed Sensor tolerance	± 0.3m/s
Wind Direction Sensor tolerance	± 3°

CHARGING PILES SUBSYSTEM

Empyrean's charging piles subsystem supports contingency charging for electric vehicles and electric bicycle.

- Output power 3.5KW.
- Output side overload protection, short circuit protection and leakage protection;
- AC Input equipped with D-level lightning arrestor, over voltage protection;
- Emergency stop switches.
- Support real-time display of the charging method, time, power, and cost.
- Can support a national power grid card.

Electric Vehicle Charging Specification

Item	Technical Specification
Charging Voltage	220 VAC
Charge Current	32A
Protection Rating	IP54
Meter Accuracy	2.0
Connector Mechanical lifetime	≥ 10000
Mean time between failures:	MTBF ≥ 8760h

Electric Bicycle Charging Specification

Item	Technical Specification
Charging Voltage	200~230 VAC
Max Charging Current	10A
Output voltage:	36~80V
Maximum power:	2560W

EMERGENCY CALL SUBSYSTEM

Call Host

Call Branch

- Emergency call system supports monitoring outgoing broadcasting and outdoor branch call monitoring center.
- Broadcasts support emergency information and notifications.
- Outdoor call monitoring center supports incoming emergency call.

Emergency Call Specification

Item	Technical Specification
Network interfaces	RJ45
Audio sampling rate	16K~48K
Broadcast audio format	MP3, WAV
Output frequency	20Hz ~ 20KHz

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