



2025

# Solar System LED Lighting



HOLDINGS

CYAN HOLDINGS  
*Company Profile*  
2025

Make your Light be True !

**CYAN HOLDINGS,**

Change the energy world !

## **1. Vision**

## **2. Company Over View**

Organization

System Portfolio

Business Model

LED Lighting

LED Outdoor Light 1

LED Outdoor Light 2

LED Outdoor Light 3

LED Indoor Light 1 -5

Light Installation

## **3. Solar Street Light for ECO Plane**

Features

PV Module

LED Street Light

Light Intensity Distribution Curve

Controller

Battery

# Vision

We, CYAN HOLDINGS Co., Ltd., are a leading company in Korea manufacturing LED lighting & Solar system for indoor and outdoor application products. , CYAN HOLDINGS Co., Ltd. was founded by Chul Soo - Kim in 2015, based in the Korea.

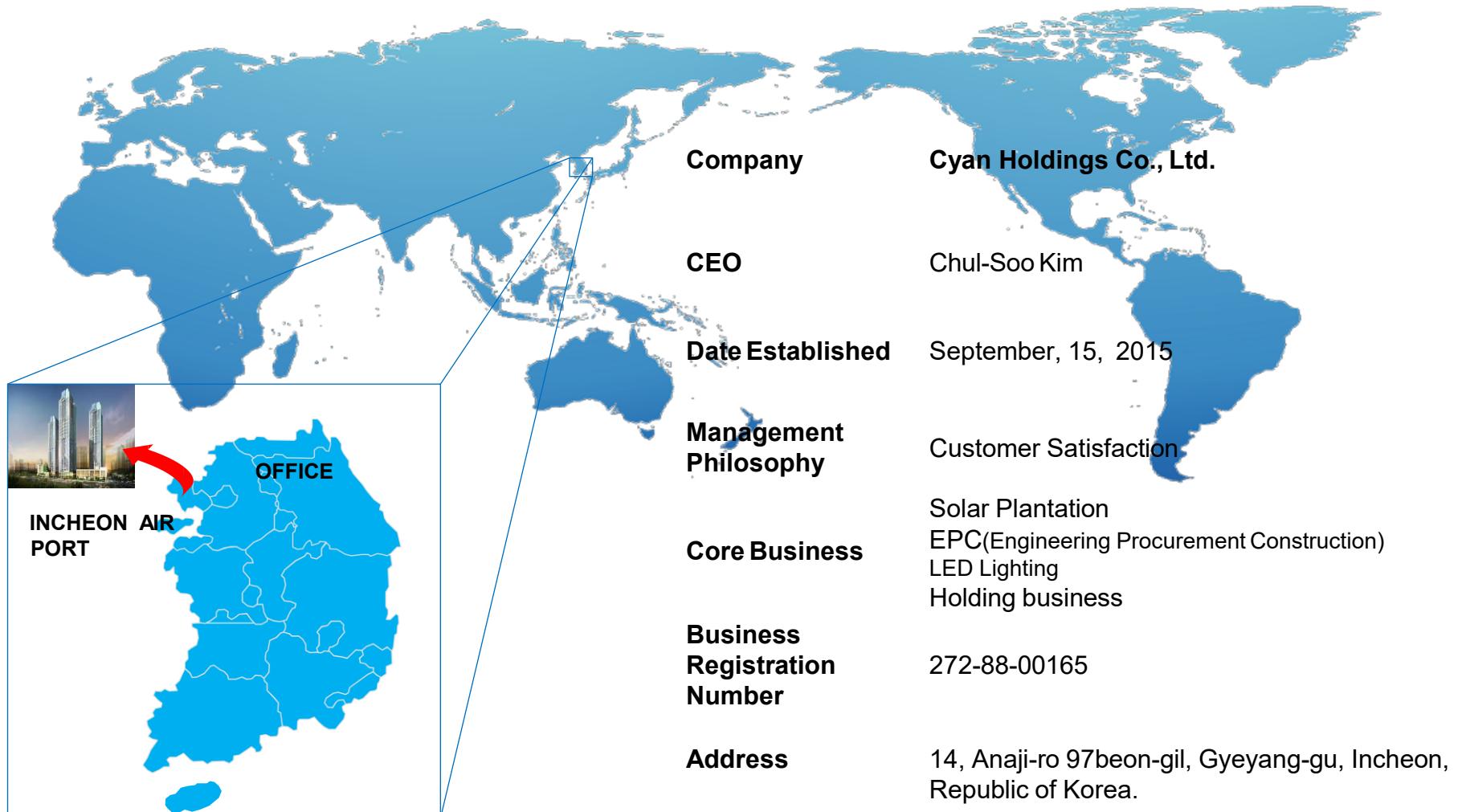
The development of renewable energy sources to replace sources of energy is one of the most important challenges of upcoming decades.

Our mission is to be the premier developer of alternative and renewable energy source that will include Light, Wind and Solar Energy. Our goal is to be the leader in product line of energy saving devices and systems that will fit our clients by offering them an alternative choice over standard lighting and high energy consuming products. Our primary focus is on LED lighting, Windmill and Solar Power system products and intelligent energy saving devices.

CYAN HOLDINGS Co., Ltd., fulfills this mission by delivering the best green energy systems in the business. Not satisfied with those achievements, all our executives and staff are doing our best to provide the best quality products and services to our customers under a rapidly changing technology environment. We are grateful for your interest in our company and you can get further information about us on our web site, <http://www.cyanholdings.co.kr>.



# Company Overview



<b>Company</b>	Cyan Holdings Co., Ltd.
<b>CEO</b>	Chul-Soo Kim
<b>Date Established</b>	September, 15, 2015
<b>Management Philosophy</b>	Customer Satisfaction
<b>Core Business</b>	Solar Plantation EPC(Engineering Procurement Construction) LED Lighting Holding business
<b>Business Registration Number</b>	272-88-00165
<b>Address</b>	14, Anaji-ro 97beon-gil, Gyeyang-gu, Incheon, Republic of Korea.

# Company Overview (History)

**2003**

10      Established Private Company → **Ornics**

**2004**

01      developed POGO Type Mainboard for **Samsung Electro-Mechanics**  
 developed V420 camera module driver board for **Smasung Electro-Mechanics**  
 developed PH-2500, WPH-S2500 camera module driver board for **Curitel**  
 developed I8900, L8900 Round-Header Board for **LG Electronics**  
 developed EG911 camera module driver board for **E to M**  
 developed TWC-2050 camera module driver board for **Telson**

02      developed E700 camera module driver board for **Samsung Electro-Mechanics**  
 developed SKTTu4 camera module driver board for **SK Telecom**

03      developed D430, 1505, M500, SLPS camera module driver Board for **Samsung Electro-Mechanics**  
 developed LED driver board for **Cammsys**  
 developed H885 driver board fro **Cammsys**

04      developed SCH-A670 camera module driver board for **Samsung Electro-Mechanics**

05      developed ER Header Board for **Cammsys**

06      developed EG911, TD5C, TDI55 camera module driver board f **Cammsys**

07      developed ER24P, ER36P header Board for **Cammsys**  
 developed E-800 camera module driver board, mega type for **Samsung Electro-Mechanics**

08      developed M13-SKTT camera module driver board for **SK Telecom**

11      developed Micron-3,2M M MT9T001 camera module driver board for **3M**  
 developed SY103, SY104 carmera module driver board for **Cammsys**



# Company Overview (History)

## 2005

- 01 developed Micron 2M OL-1126 carmer module driver board for **Cammsys**  
developed MTV9V112 camera module driver board for **Mtekvision**
- 02 developed SCH-E330 camera module driver board for **Samsung Electro-Mechanics**
- 04 developed SGH-E300 camera module driver board for **Samsung Electro-Mechanics**
- 08 developed **Street block for blind(Patent)**

## 2007

- 01 developed SMPS 200W in casino LCD monitor for **ROGITEL**
- 02 developed radar VME BUS for **FOCUSSYSTEM**
- 03 developed a nuclear power plant Solenoid controller(400W) for **Smart Valve Company**  
developed street light electric shock protector for **Shinwoo Electric Industrial Controls co., Ltd.**
- 06 developed LED display demo kit for **ExpoView, Inc**  
developed LED Street light SMPS 13.5V for **PATRA co., Ltd.**
- 07 developed ORNICS LED Street light  
developed LED Street Light SMPS for **Shinsung-Lux Technology Co., Ltd.**  
developed Smart Fan sesor & Controller for **SD System Co., Ltd.**  
developed Tunnel Emergency LED Panel Light for **Chongbo Electric Co., Ltd.**  
developed Acriche Demo Kit for **Seoul Semiconductor**
- 08 developed infrared Sensor LED Driver for **Seoul Optodevice**  
developed ATX, computer sub board, for **ROGITEL**  
developed Z-power LED Driver Module for **Seoul Semiconductor**
- 11 developed LED Energy Taxi Light for **Hyorim Industrial Inc.**  
developed Natural White Demo Kit for **Seoul Semiconductor**  
developed HBMGFR722 Demo Kit for **Seoul Semiconductor**
- 12 developed Casino Bill Acceptor Sub Board for **ROGITEL**  
developed 120W LED Flood Light for **Bandilux**  
developed Detector of Tracks Disconnection for **BooYoung Industrial Electronic Co., Ltd.**



# Company Overview (History)

## 2008

- 01 developed AW2211 Demo Kit for **Seoul Semiconductor**
- 03 developed LED Lens Demo Kit for **Seconix Co., Ltd.**
- 04 developed SFT825N PCB for **Seoul Semiconductor**
- 04 developed Top LED2, CWT722, CAW 722-S, for **Seoul Semiconductor**
- 05 developed P7 Driver Board for **Seoul Semiconductor**
- 05 developed LT520 Driver Board for **Seoul Optodevice**
- 06 developed SFT722N-S, SFT825N-SB, SFT825Z-SB Driver for **Seoul Semiconductor**
- 07 developed 30W LED Flood Light for **Lumicomm, Inc.**  
developed 70W LED pedestrian Light for **Banilux**  
developed SFT825N-SA, SFT825N-SC Driver Board for **Seoul Semiconductor**
- 08 developed Z-Power W7240CO Driver Board for **Seoul Semiconductor Japan**  
developed SFT8211N-BS-A and B Driver Board for **Seoul Semiconductor**
- 10 developed LED Solar Emergency Taxt Light for **Pyrotec Technology**



## 2009

- 01 developed 8W LED Lamp for **Bandilux**
- 02 developed SMPS SE-600-24V for **Bandilux**
- 03 developed Full Color LED Bar 50 for **Bandilux**
- 04 developed 22W LED fluorescent light 1200mm for **Bandilux**
- 05 developed CIMG Type LED Down Light for **ERGO German**
- 06 developed 1M 14W LED Purchase Type Light for **Bandilux**
- 07 developed 60W LED Flood Light for **IUS Co., Ltd.**
- 07 developed 25W LED Fluorescent Light Module for **Bandilux**
- 09 developed Roo Screen LED Bar for **SP Data**



# Company Overview (History)

## 2010

- 03 developed LED Solar Light and Solar Home Light for **India**
- 04 developed 60W Solar Type LED Street Light for **Hi-Energy Korea Co., Ltd**
- 05 developed 4.5W LED Downlight for **NoxTech Co., Ltd.**
- 06 developed LED Factory Light for **India**
- 10 developed LED Plant Cultivation Equipment for **Hyunjin Lighting Co., Ltd**
- 11 developed LED GU10 and MR16 for **ERGO LED German**
- 12 developed 60W LED Movie Light for **GTEKMedia USA**



## 2011

- 03 developed LED Solar Light and Solar Home Light for **India**
- 04 developed 60W Solar Type LED Street Light for **Hi-Energy Korea Co., Ltd**
- 04 JVA Russia Amuro region **Agreement**
- 05 developed 4.5W LED Downlight for **NoxTech Co., Ltd.**
- 06 developed LED Factory Light for **India**
- 10 developed LED Plant Cultivation Equipment for **Hyunjin Lighting Co., Ltd**
- 11 developed LED GU10 and MR16 for **ERGO LED German**
- 12 developed 60W LED Movie Light for **GTEKMedia USA**



# Company Overview (History)

## 2014

- 01 LED Flat Light 50W for **Suan Havy Ind. Co., Ltd**
- 02 LED Hi-bay Light 120W for **Mando Co., Ltd**
- 03 LED Street Light and Tube Light for **Saeron Automotive Co., Ltd.**
- 04 LED Factory Light for **Metaldyne Co., Ltd.**
- 04 LED Hi-bay Light 120W for **SBC-enertech Co., Ltd**
- 05 LED Tube Light 20W **Wooju Elec. Co., Ltd.**
- 09 LED Downlight, Par30, LED HQI 45W **Bupyong station**



## 2015

- 06 TISI Approved for LED Street Light **Thailand**
- 09 **Establishment of CYAN HOLDINGS Co., Ltd**
- 11 CYAN HOLDINGS Co., Ltd. with PTS3 JVA **Philippine**
- 12 Philippine Air port Bidding for CCTV (BOC)



## 2016

- 05 developed 25W LED Module
- 06 developed LED street Light 25W to 200W
- 07 developed LED Solar street 25W to 75W



# Company Overview (History)

## 2016

11      Installed Vietnam 80W LED Street Light for solar **Vietnam**  
 11      developed LED Hi-bay aging tester **Parlux**



## 2017

06      Installed Vietnam 3KW solar system **Vietnam**



## 2018

06      Installed Vietnam 3KW solar system **Vietnam**  
 08      developed Smart led safety floor controller **sung won**  
 12      Landscape lighting references **Bupyeoung city**



## 2019

12      developed ice cream dispenser **Gela World**



# Company Overview (History)

## 2020

- 02 developed hi efficiency led street light 150w
- 03 developed Pedestrian crossing work **A1 Traffic light R&D**
- 07 developed Pedestrian crossing work demo kits **A1 Traffic light R&D**



## 2021

- 06 developed plasma and ionizer 4,5KV 5,5KV **AHA**
- 11 developed plasma 7,5KV **AHA**

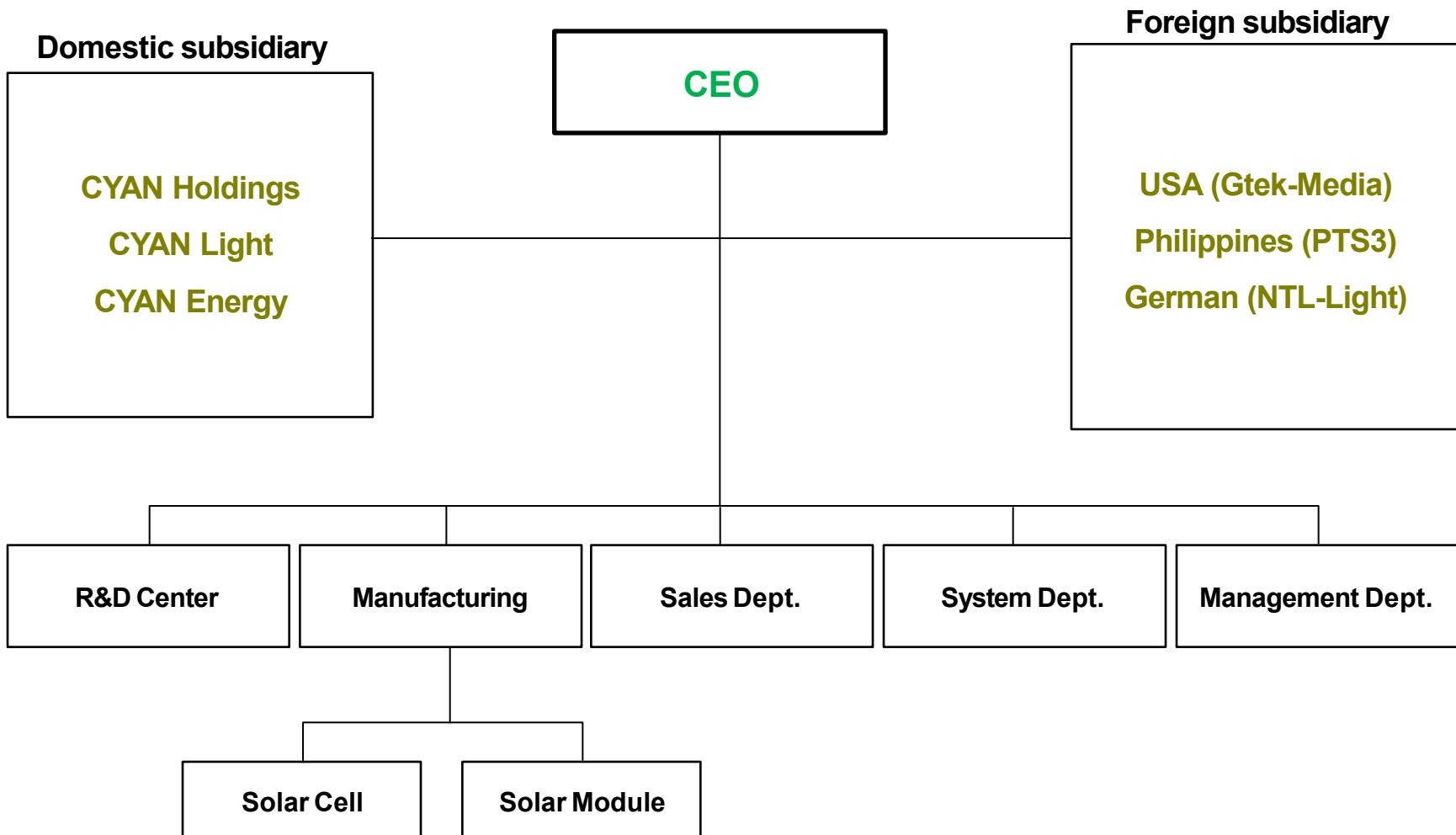


## 2022

- 08 Patent ROAD-CONDITION WARNING DEVICE
- 09 Patent ROAD INFORMATION DISPLAY DEVICE
- 11 Patent NOTIFICATION SYSTEM FOR TURNING VEHICLE
- 12 Indonesia Siak city for solar power plan for 100MW



# Organization



# System Portfolio



# Business Model



# LED Lighting



# INTEGRATED SOLAR STREET LIGHT

## Integrated Solar Street Light 80W

Life(hrs) : 50,000 ~ 60,000(5 years if using 12hours per day)

Energy Save : 70 ~90%

Application : Park, Room, Ceiling, Spot lighting

Color Rendering : >Ra80



Vertical Adapter



Horizontal Adapter

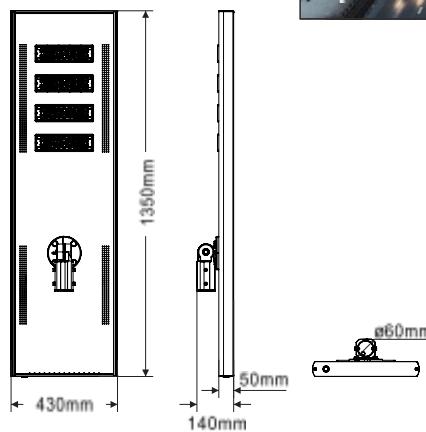
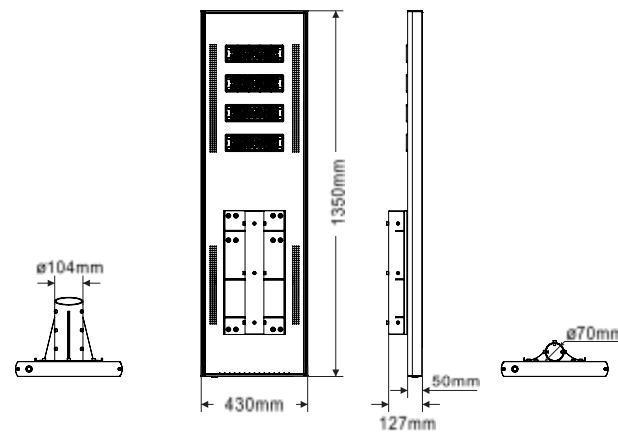
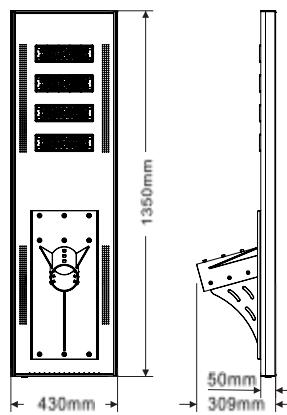


Adjustable Adapter



Model : CY-ISSL-80W

Power Consumption	80W
CRI	>80
Efficiency (lm/w)	150-160
Luminous Flux (lm)	12,400
Dimension W x H x D (mm)	1350 x 430
Battery	Li-ion 3.7V 100Ah



# SOLAR STREET LIGHT

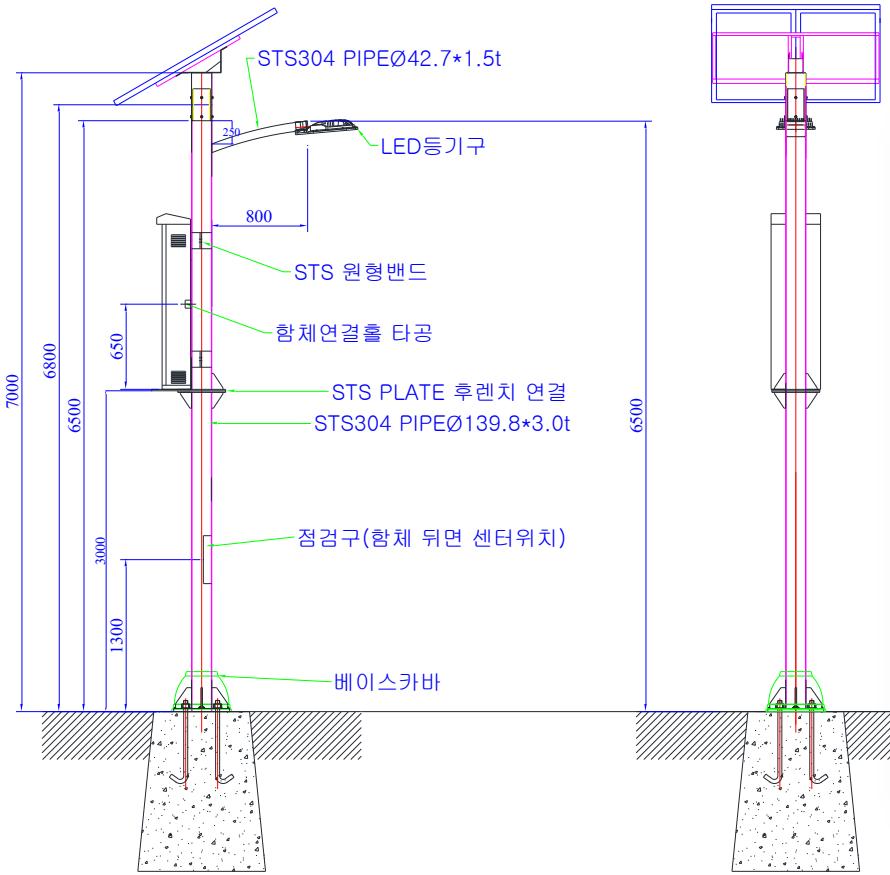
## Integrated Solar Street Light 80W

Life(hrs) : 50,000 ~ 60,000(5 years if using 12hours per day)

Energy Save : 70 ~90%

Application : Park, Room, Ceiling, Spot lighting

Color Rendering : >Ra80



Model : CY-ISSL-80W

Power Consumption	80W
CRI	>80
Efficiency (lm/w)	150-160
Luminous Flux (lm)	12,400
Dimension W x H x D (mm)	1350 x 430
Battery	Li-ion 7.4V 100Ah



Adjustable dapter



## **Integrated Solar Street Light 60W**

Life(hrs) : 50,000 ~ 60,000(5 years if using 12hours per day)

Energy Save : 70 ~90%

Application : Park, Room, Ceiling, Spot lighting

Color Rendering : >Ra80



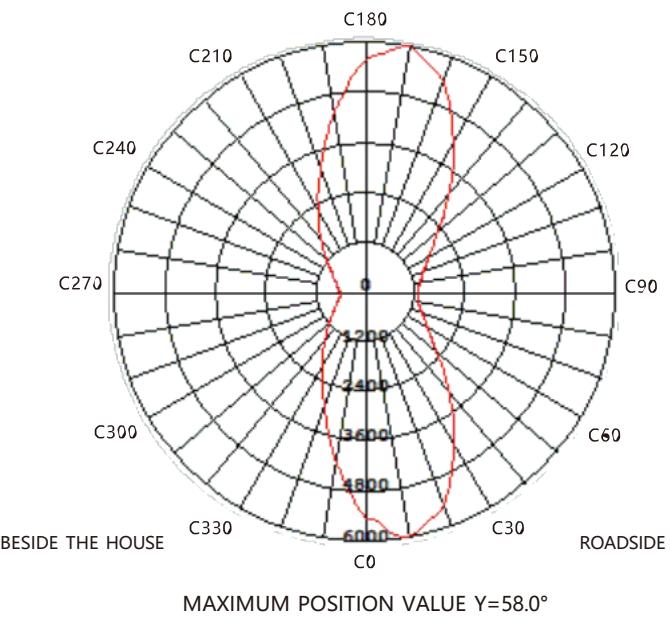
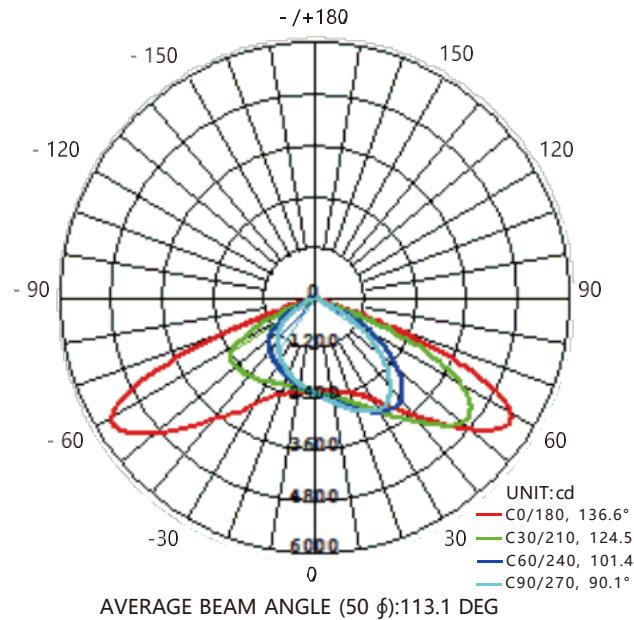
**CY-SL120A (40W)**



**CY-SL300P (60W)**

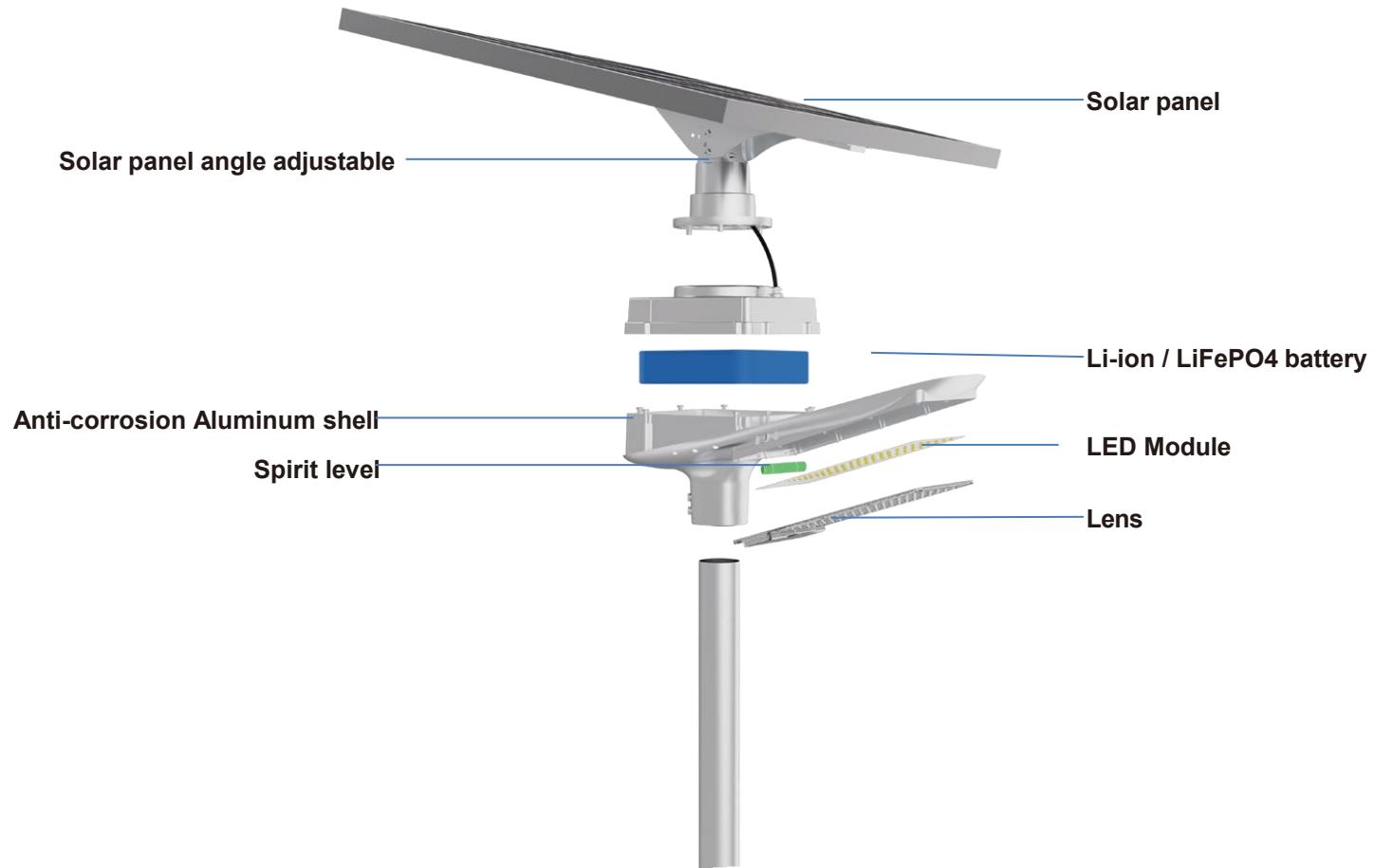
## Luminous intensity distribution curves

### Luminous intensity distribution curves



# SOLAR STREET LIGHT

## Assembly



## Core Technologies



### MPPT Technology

MPPT is an advanced charge mode whose full name is Maximum Power Point Tracking function which can increase the energy utilization rate by 15% to 20% than the PWM controller.



### Multi-Peak MPPT

Cyan new products solar controller adopts multi-peak MPPT technology, which can timely track the maximum power point and improve the conversion efficiency of solar panels.



### IPC 5.0 Technology

Through 10years' experience, Cyan upgraded highly precise 5.0 version IPC technology (intelligent power control 5.0). It will intelligently detect recent weather conditions, reasonably plan the discharge power to achieve more rainy days.



### Dual Low-power Consumption

4pins plug technology to enables transportation power consumption less than 0.05mA, and circuit protection technology to enables the sleep power consumption in long-term transportation of storage will be at uA level, realizing worry-free storage for two years.

## Core Technologies



### ICD Technology (Intelligent Charge and Discharge)

Using Grade A LiFePO4 battery with excellent safety performance. Cyan's unique current equalization and dual protection (software and hardware) enable the battery's capacity remains at 90% after 2000 cycles. Lifetime is 4 times longer than that of lead-acid batteries.



### High Efficiency LED Chips

Using high efficiency 140pcs of 5050 LED chips, optimized brightness, single lumen value>190lm/w, with the aluminum chip base makes excellent heat dissipation.



### Battery Program Upgraded

Embedded single string control technology. More stable and longer lifespan.

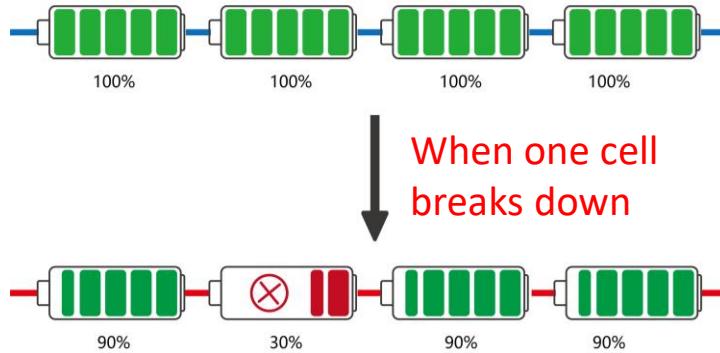


### Intelligent Power Control

Embedded intelligent monitoring 5.0 system, AI intelligently detecting recent weather conditions, reasonably plan the discharge power to achieve more rainy days.

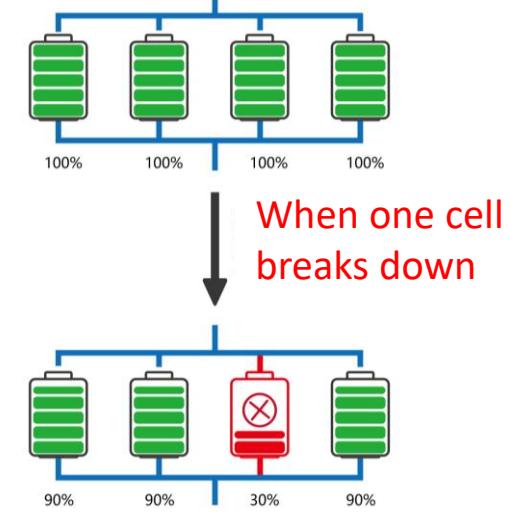
## Charge system

Multi-string connection



When one cell  
breaks down

Parallel connection



When one cell  
breaks down

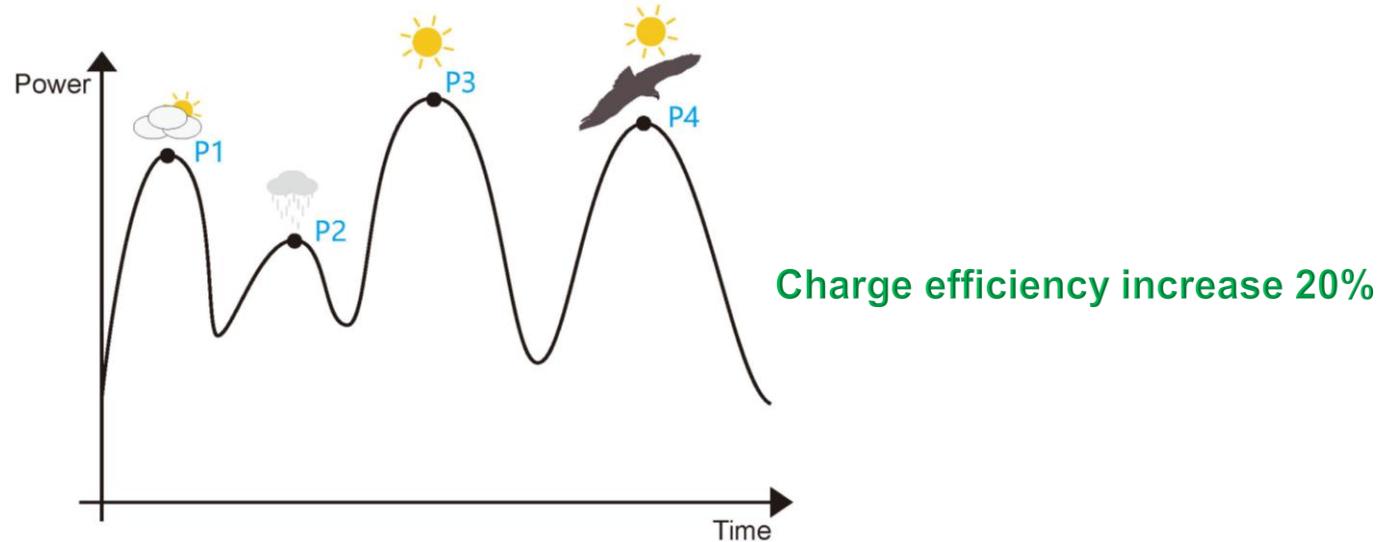
### 3.2V MPPT Technology up to 160W

Battery cell have consistency differences in capacity, internal resistance and voltage. When use the 12V or 24V multi-string technology, the lifetime of the entire battery pack will be affected if there is a problem with one battery cell.

While 3.2V MPPT technology can realize that even one battery cell has problem, the lifetime of the entire battery pack will not be affected. The 3.2V MPPT reduces the probability of battery problems by **75%** than that of 12V system, effectively improved the overall product stability and lifetime 3 times.

# SOLAR STREET LIGHT

## Multi-Peak MPPT

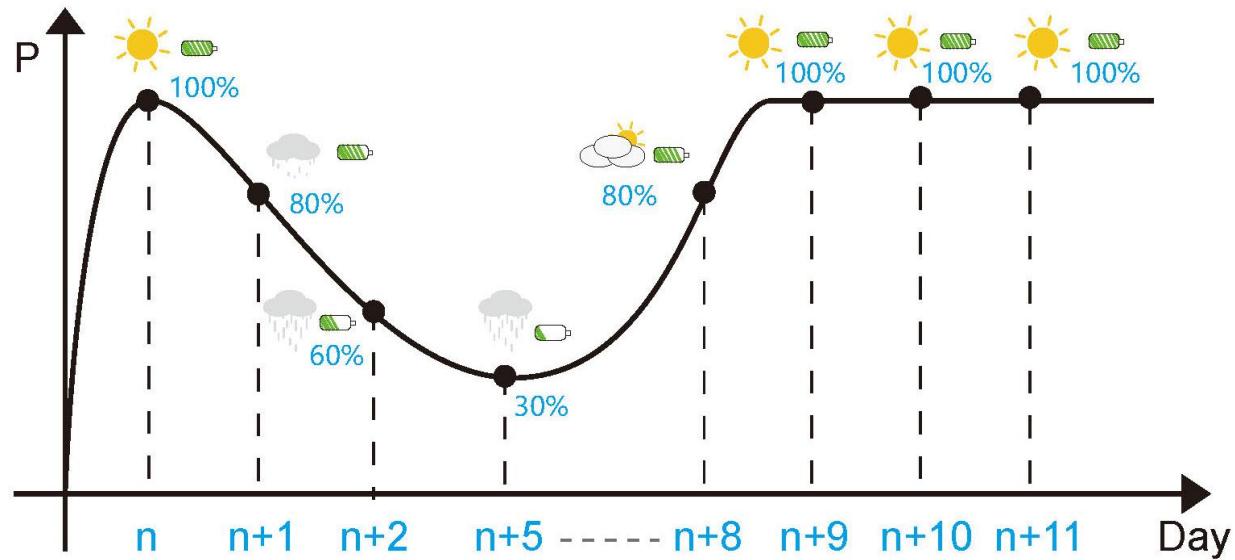


When there is something covering the solar panel such as dust, tree shadows and bird droppings or part of the panel is damaged, the IV curve will have multiple peaks power.

However, the traditional single-peak MPPT technology cannot track accurately the maximum power point. Cyan new products solar controller adopts **multi-peak MPPT (maximum power point tracking technology)**, which can timely track the maximum power point and improve the conversion efficiency of solar panels.

# SOLAR STREET LIGHT

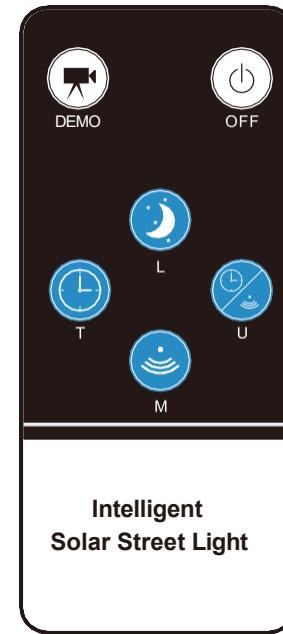
## Power Control



## Remote Control

## 6 working modes

-  DEMO: No matter day or night, light "on" for 1 minute.  
Only for test use
-  OFF: Light "off", no matter day or night
-  L: At night, 100%-2hrs, 60%-3hrs, 20%-dawn
-  T : At night,100%-3hrs, 50%-3hrs, 30%-2hrs:
-  M: At night, 100%-3hrs, 50%-3hrs
-  U: At night, 100%-3hrs, 50%-3hrs(Highlight mode)

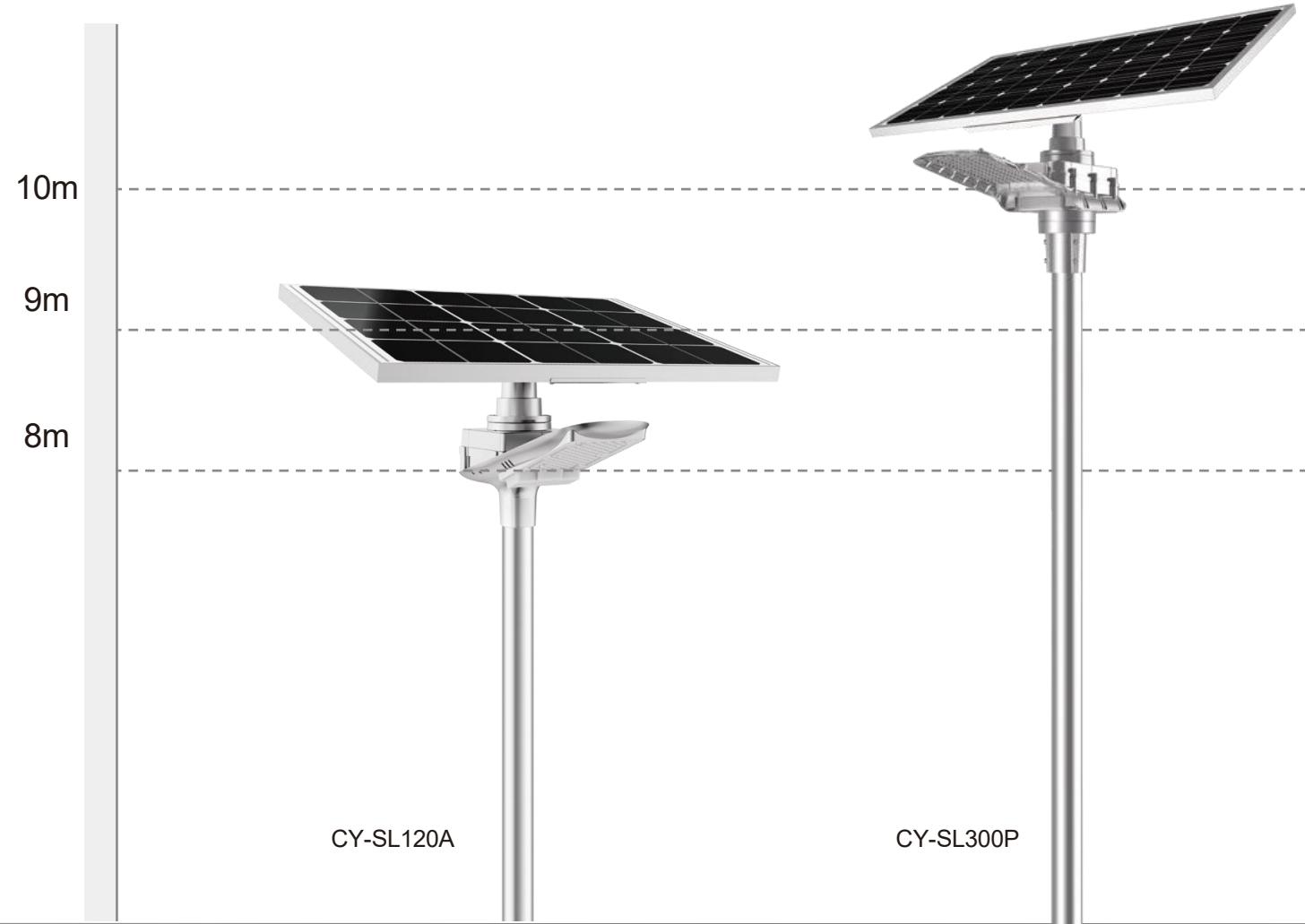


Note:

1. Default is L mode, can choose best mode according to different sunshine condition.
2. The three LED indicator lights will twinkle if modes changing successfully.
3. Once a certain mode was set successfully, it will be reserved until you change other modes with remote control.
4. U Highlight mode: Increase 30% on the original basis, mean 3H-130%, 3H-80%.

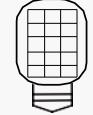
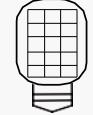
# SOLAR STREET LIGHT

## Light Post Installation Height Recommendation



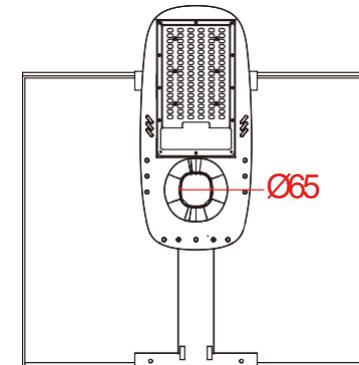
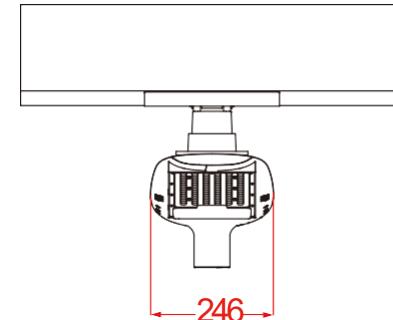
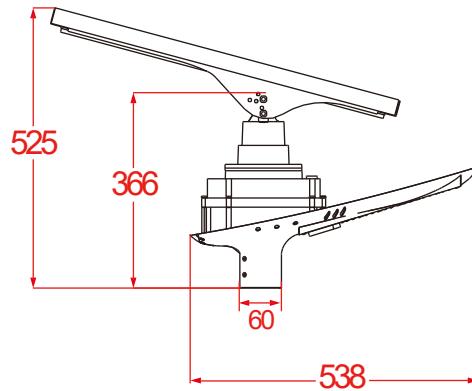
# SOLAR STREET LIGHT

## Indicator light status instructions

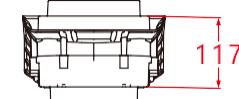
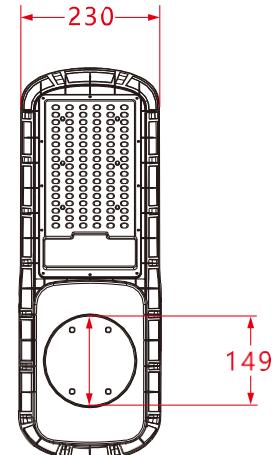
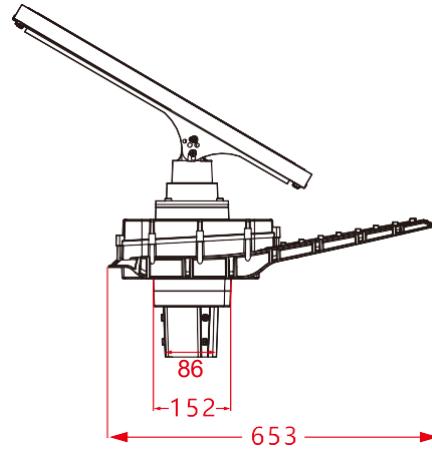
LED	Indications	Status	Functions
● Blue 	Charging indication 	Long-term On	During the day, it's not charging
		Slow twinkling	Be charging
		Long-term Off	Night
● Red 	Battery indication 	Long-term On	Battery works normally
		Long-term Off	Battery is not connected/No power
		Fast twinkling	Battery is over discharged
		Slow twinkling	Battery full charged
● Green 	Load indication 	Long-term On	Load is on
		Long-term Off	Load is off

## Lamp Dimension

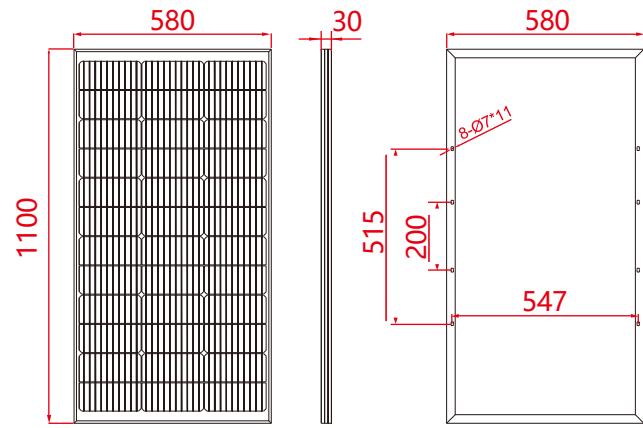
CY-SL20A



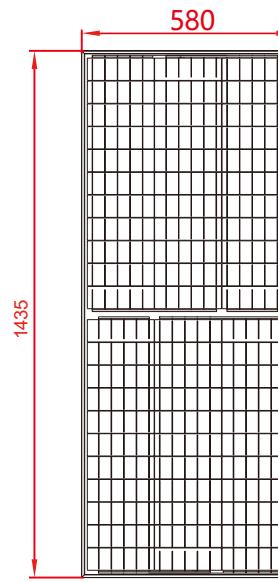
CY-SL300P



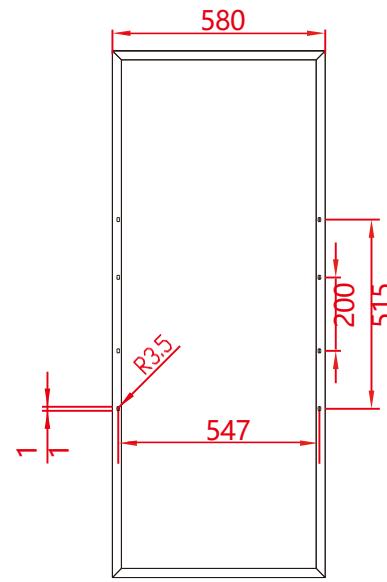
## Solar Panles



120W / 18V



150W / 18V



# SOLAR STREET LIGHT

## Product Installation



Solar panel



lamp holder



Sleeve



Bracket



1: Solar panel assembly and fixation with 4 screws



2: Install and fix the solar panel bracket with 4 screws



3: Connect the solar panel to the lamp body with 3 screws



4: The lamp body and the lamp pole are connected and fixed with 4 screws

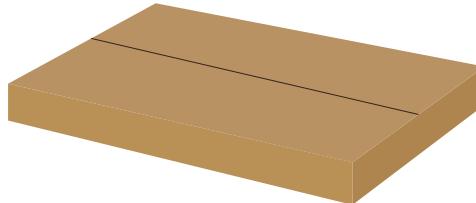
# SOLAR STREET LIGHT

## Packing

The packaging as shown below is for reference only, the actual packaging is subject to the specific product.



Lamp body packing



Solar panel packing(120W/150W)

Model Name	Carton Size	1 set/ CBM	1*40HQ Quantity	CBM	1set weight(kg)	1*40HQ(goods weight(kg)
CY-SL120A	680x410x280mm, 2pcs/ctn 1,190x660x80mm, 2pcs/ctn	0.067	1,000	67	14,75	14,750
CY-SL300P	720x310x280, 1pc/ctn 1,525x660x65mm, 1pc/ctn	0.127	530	67.31	21,9	11,607



### Save electricity and reduce light pollution

Automatically or remotely control the brightness of streetlights depending on time zone and vehicle movement



### safe road lighting

Remotely monitor road lighting conditions with fault detection sensors

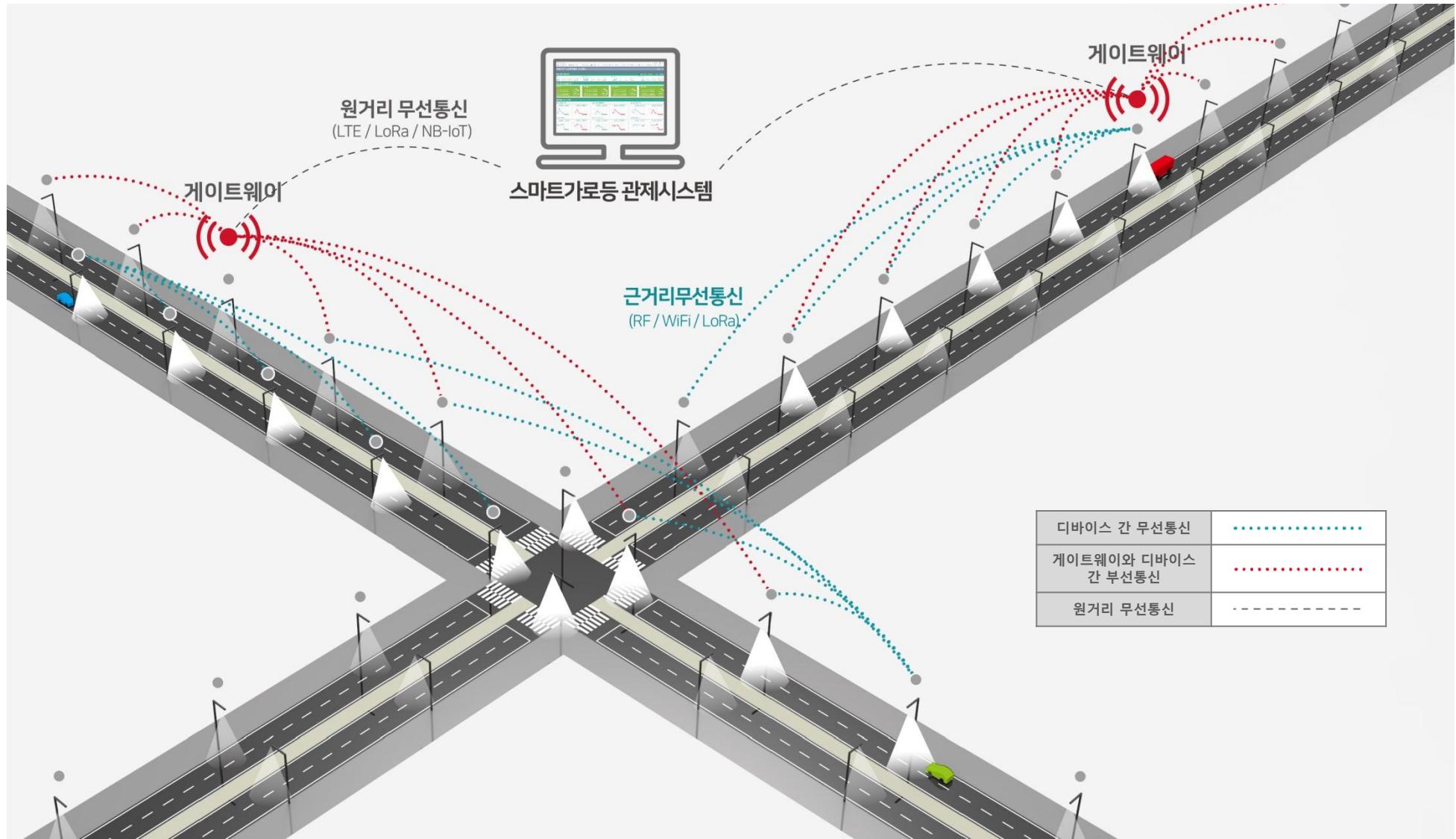


### road information collection

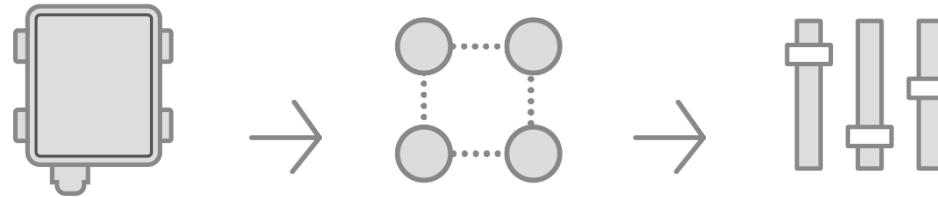
Traffic volume detection sensor provides traffic volume and speed information

Provides streetlight electricity usage information

## Farm road Lighting Design



# Farm road Lighting Design



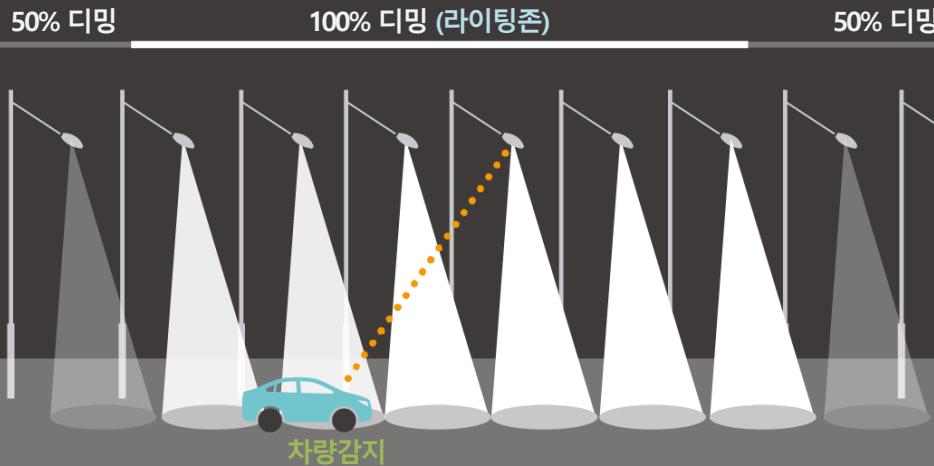
Vehicle movement direction  
and speed detection  
스마트디바이스 Radar 센서

무선 양방향 통신  
RF(LoRa)

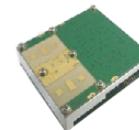
조명제어  
Dimming up & Down

차량 이동방향과 속도에 반응하여 가로등 조명의 다이나믹 디밍 → 라이팅존 형성

- 차량속도 감안하여 최대 100m 전방에서 감지하고, 속도에 따라 조명제어(100% 밝기 조절)
- 후속 차량 없을 시 기본디밍으로 밝기 자동제어

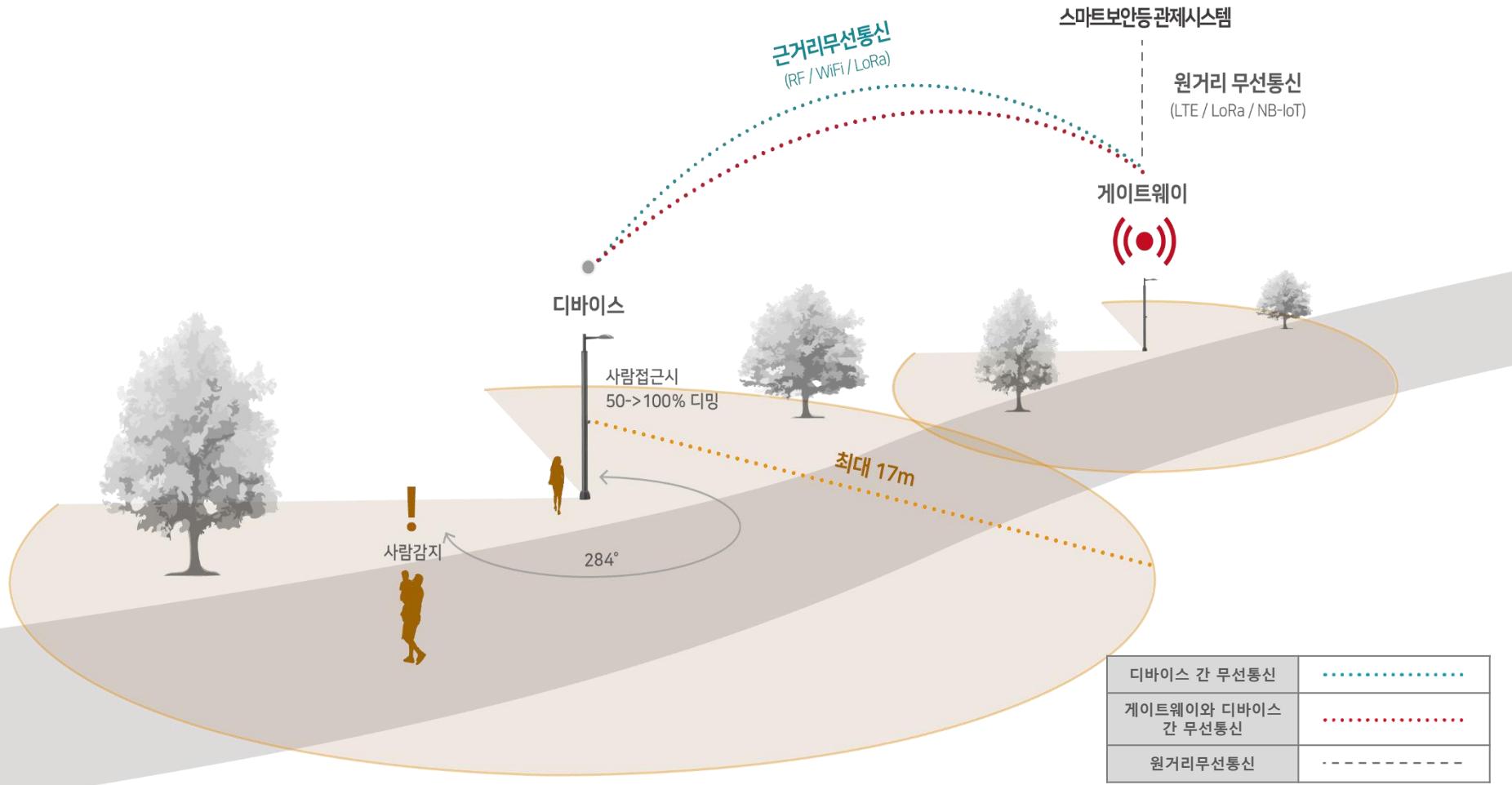


Radar Sensor



Doppler Radar Sensor

구분		Specfication
Frequency		24.05~24.25 GHz
Beam Area		(Hori.)60° , (Ver.)35°
Detection Area		Max. 200km/h
Detection Distance		Ma. 60m (6Lane)
Install High		Pole Type 5~8m
Dimension	Doppler	50 x 45 x 10 mm
	FMCW	80 x 60 x 30 mm
Voltage		+5 VDC
Power		1~2 W
Storage Temperate		-40 °C ~ +85 °C
IP		IP68
Certification		KC Certification



## Traffic signal controller



Standard "A" Type



Standard "A" Type  
(LSU 8slot)



Slim "B" Type

### - Product features

- Compatible with other Korean companies
- On / Off line control
- Loop detector / Option board (Special function)
- Children's safety zone
- User define color

# LED TRAFFIC LIGHT

## LED Traffic light 300mm (12")



- Embossed lens
- Weather Proof



- Clear lens
- Weather Proof

TECHNICAL SPECIFICATIONS								
	VEHICLE SIGNAL LAMP			ARROW SIGNAL LAMP			PEDESTRIAN LAMP	
	RED	YELLOW	GREEN	RED	YELLOW	GREEN	RED	GREEN
Luminance Intensity	≥ 400cd	≥ 400cd	≥ 400cd	≥ 200cd	≥ 200cd	≥ 200cd	≥ 100cd	≥ 100cd
Power Consumption	10W≥	10W≥	10W≥	6W≥	6W≥	6W≥	6W≥	6W≥
No.of Diodes(pcs)	≥ 144	≥ 144	≥ 132	≥ 48	≥ 48	≥ 48	≥ 80	≥ 80
Power Factor	> 0.9			> 0.9			> 0.9	
THD	< 20%			< 20%			< 20%	
Transformer	built-in			built-in			built-in	
Input Voltage	85V AC ~ 285V AC (Free volt)			85V AC ~ 285V AC (Free volt)			85V AC ~ 285V AC (Free volt)	
Output Voltage	13V±1V			13V±1V			13V±1V	
Operating Frequency	60Hz			60Hz			60Hz	
Operating Temperature	-30°C ~ 70°C			-30°C ~ 70°C			-30°C ~ 70°C	
Lens Material	Polycarbonate			Polycarbonate			Polycarbonate	
Lens Type	Clear / Embossed / Weather Proof			Clear / Embossed / Weather Proof			Clear / Embossed / Weather Proof	
Ingress Protection Rating	IP 66			IP 66			IP 66	
Warranty Period	5 Years			5 Years			5 Years	
Environmental Aspect	Environmental Friendly			Environmental Friendly			Environmental Friendly	

# LED TRAFFIC LIGHT

## Integrated Pedestrian Lamp



- Clear lens
- Weather Proof

### TECHNICAL SPECIFICATIONS

	PEDESTRIAN LAMP 300mm(12")		PEDESTRIAN LAMP 200mm(8")	
	RED & GREEN	GREEN & RED	RED & GREEN	GREEN & RED
Luminance Intensity	≥ 200cd	≥ 200cd	≥ 100cd	≥ 100cd
Power Consumption	15W ≥	15W ≥	15W ≥	15W ≥
No.of Diodes(pcs)	≥ 240	≥ 240	≥ 180	≥ 180
Power Factor	> 0.9		> 0.9	
THD	< 20%		< 20%	
Transformer	built-in		built-in	
Input Voltage	85V AC ~ 285V AC (Free volt)		85V AC ~ 285V AC (Free volt)	
Output Voltage	13V±1V		13V±1V	
Operating Frequency	60Hz		60Hz	
Operating Temperature	-30°C ~ 70°C		-30°C ~ 70°C	
Lens Material	Polycarbonate		Polycarbonate	
Lens Type	Clear / Embossed / Weather Proof		Clear / Embossed / Weather Proof	
Ingress Protection Rating	IP 66		IP 66	
Warranty Period	5 Years		5 Years	
Environmental Aspect	Environmental Friendly		Environmental Friendly	

# LED TRAFFIC LIGHT

## Assembly

Full set



Red



Yellow



Arrow



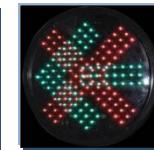
Green



Pedestrian



Cross



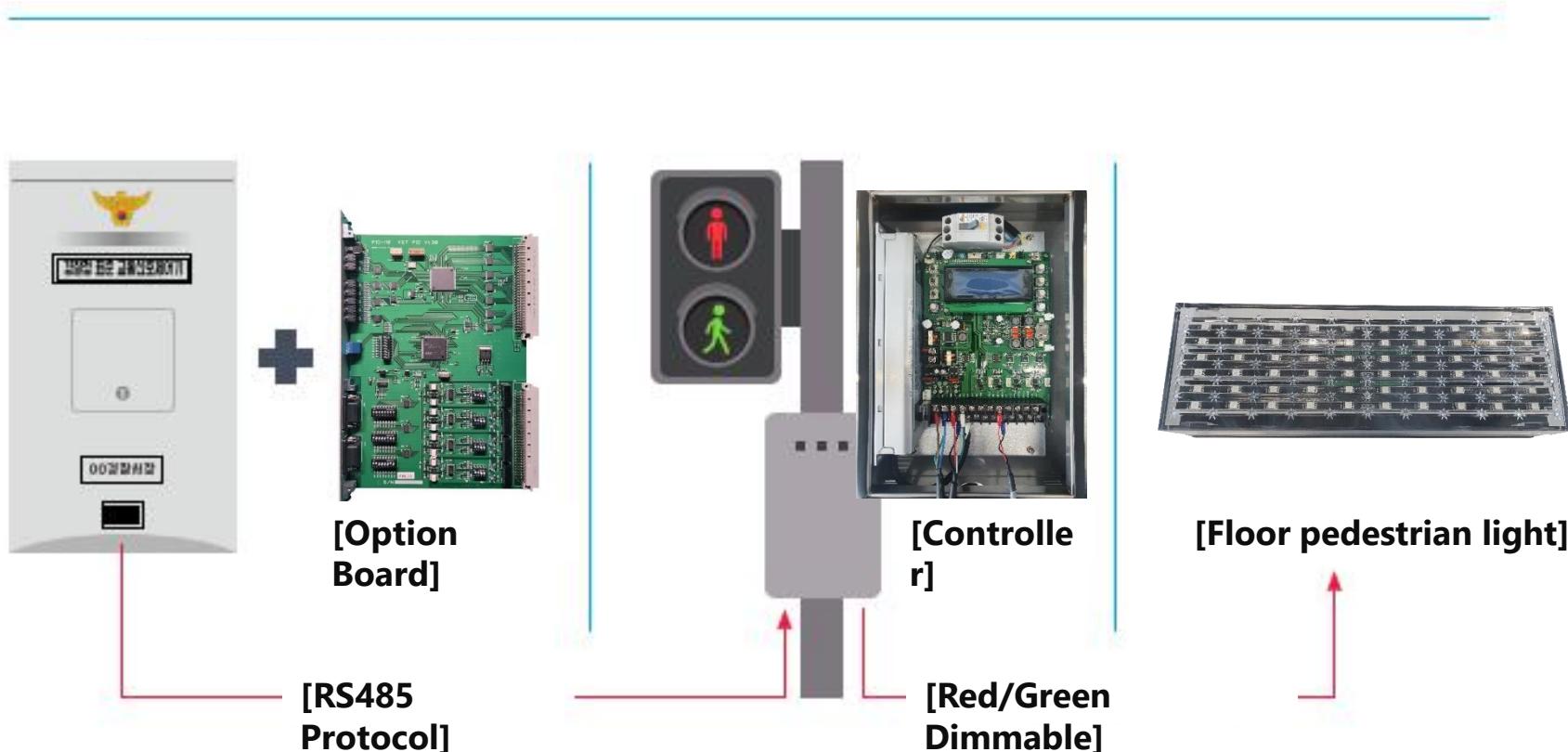
Red & Green  
Timer



Bicycle

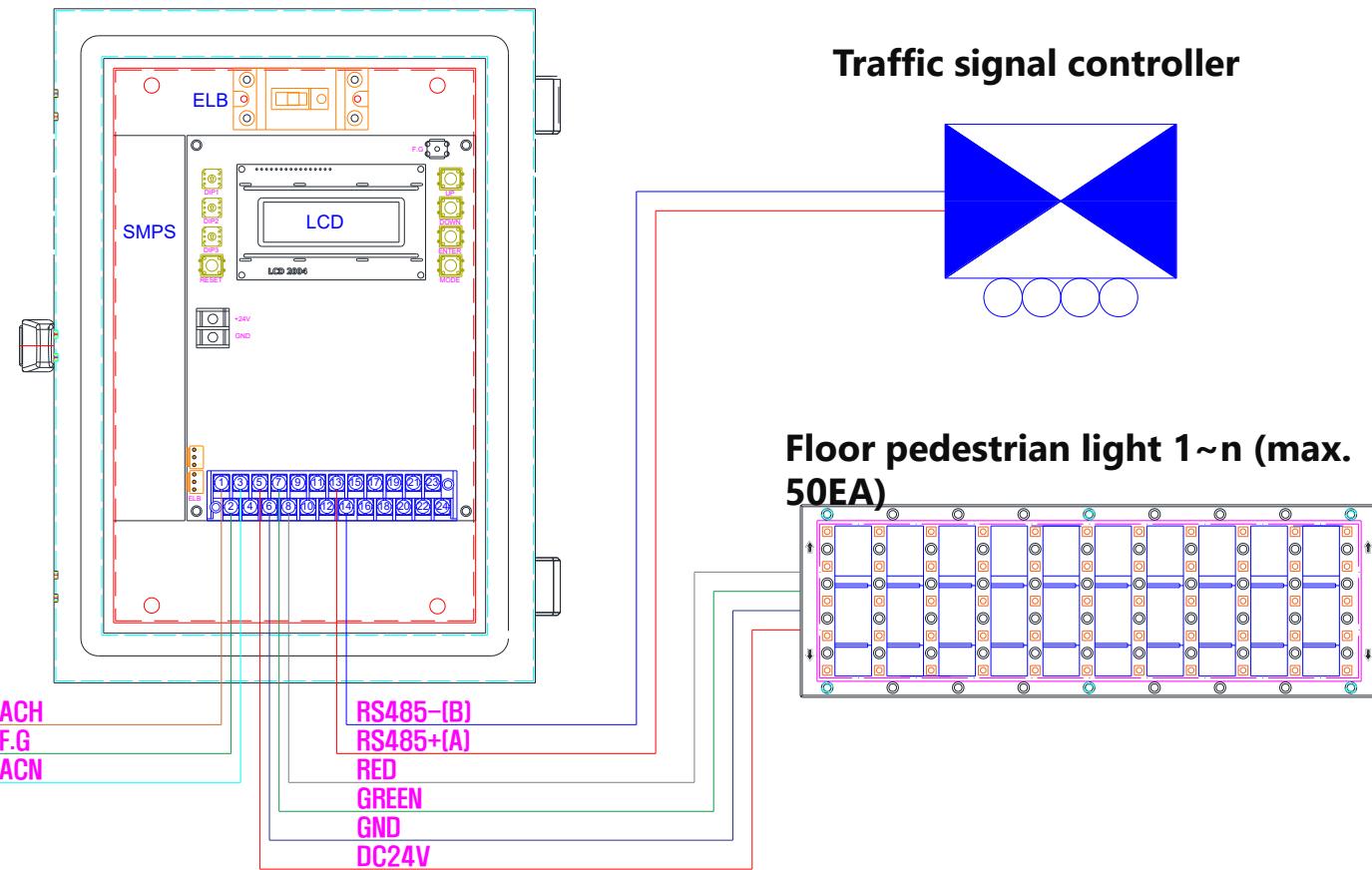


## Integrated Pedestrian Lamp – Block diagram 1

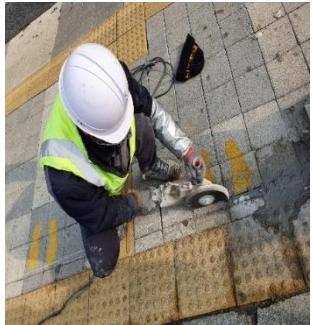


- . Option Board : It is inserted into the traffic signal controller and reports signal status, etc. to the control unit. device that transmits
- . Controller : pedestrian signal lights from the option board inserted into the traffic signal controller. Collects the status and monitors display unit equalization control, dimming control, and abnormal operation. device to control
- . Floor pedestrian light :Installed on the floor, the walking signal status is green, flashing, and red. device that expresses

## Integrated Pedestrian Lamp – Block diagram 2



## Integrated Pedestrian Lamp – Installation process



**Block cutting**



**Block rebalancing**



**Fixture connect**



**Buried in the ground**



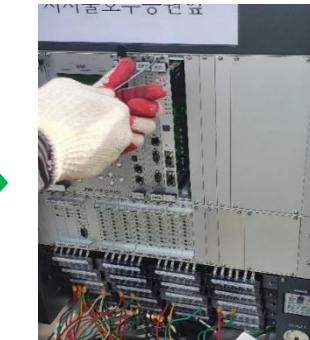
**Filling the gaps with silica sand**



**Power supply line connection**



**Controller installation**



**Insert Option Board**



**Operation test**

# *Traffic lights fixture (LED FLOOR PEDESTRIAN LIGHT)*

## Integrated Pedestrian Lamp – Installation site



## AI PET 파쇄기



## 포인트 환전 신청방법

[앱]으로 신청하기



①

휴대전화에 하이비즈 앱을 다운로드 해주세요



②

신규 회원은 회원가입을 기존 회원은 로그인을 진행 해주세요



③

[환전하기] 버튼을 눌러주세요  
1,000P 이상 신청 가능



④

환전신청이 완료되면 신청일 기준으로 돌아오는 월요일에 다이소 상품권이 도착합니다.



## 사용방법



①

깨끗한 투명 페트병이 준비되었다면 [시작하기] 버튼을 누릅니다.



②

적립할 전화번호를 입력 후 [계속하기] 버튼을 누릅니다.



③

투입구가 열리면 페트병을 넣어주세요



④

AI카메라가 페트병을 검사 후 페트병을 파쇄합니다.



⑤

적립된 포인트를 확인하시고 [종료하기] 버튼을 누릅니다.



# *Hybrid Solar Windmill Led Light System*

*Cogging-free Permanent Magnet Technology*



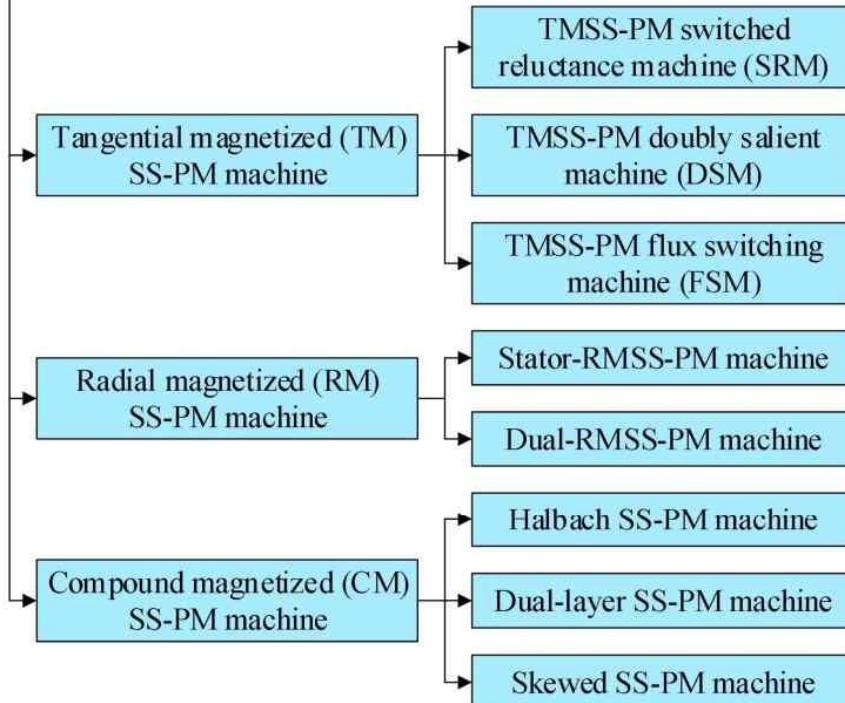
# Cogging-free Permanent Magnet

## AHSRM(Stator-PM)

*Sustainable Emerging Technology ?*

AHSRM (KOREA)  
(PCT 특허 출원)

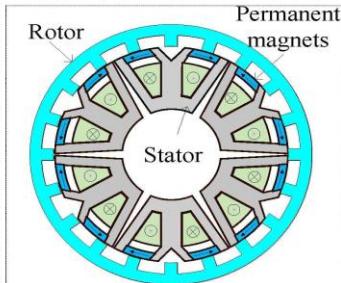
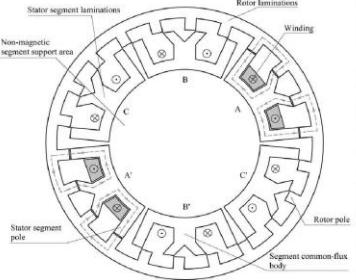
Stator slot-opening permanent magnet (SS-PM) machine



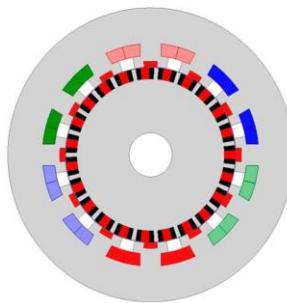
AHSRM (Stator-PM) is inherently operable because it has magnets in the rotor, so no back EMF voltage is induced (no back EMF voltage) and overvoltage protection of the converter is required.

# Cogging-free Permanent Magnet

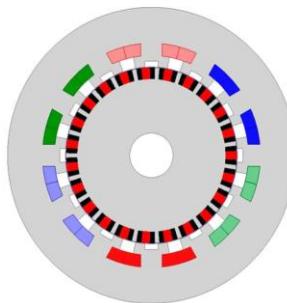
## Technology for AHSRM(Stator-PM)



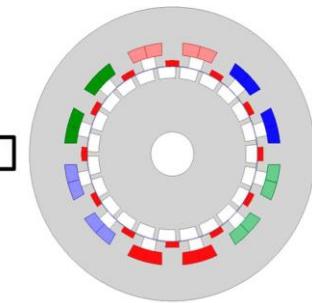
Sustainable Emerging Technology ?



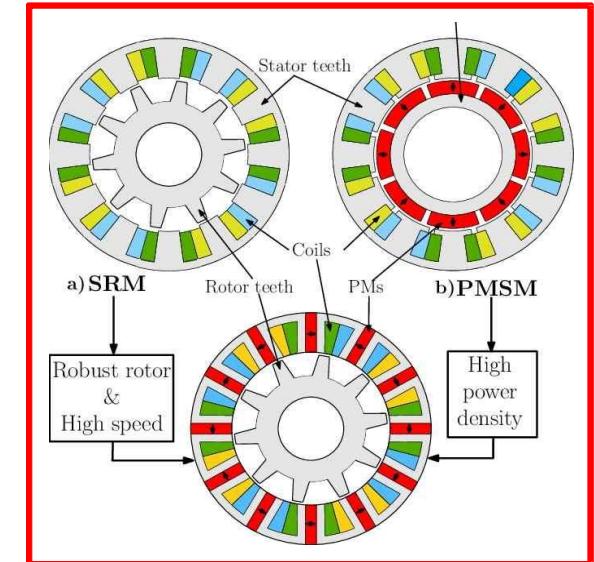
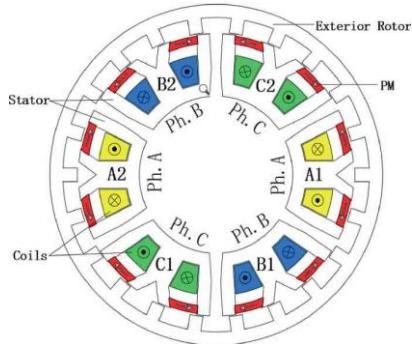
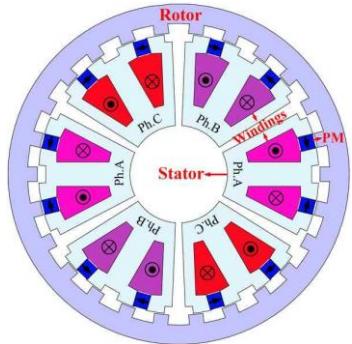
**Split tooth dual  
PM machine**



**Split tooth rotor  
PM machine**



**Split tooth stator  
PM machine**

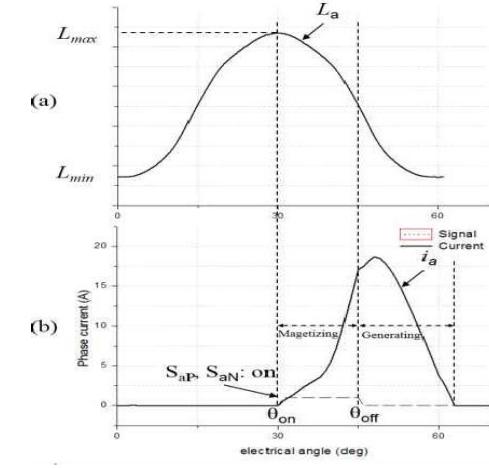
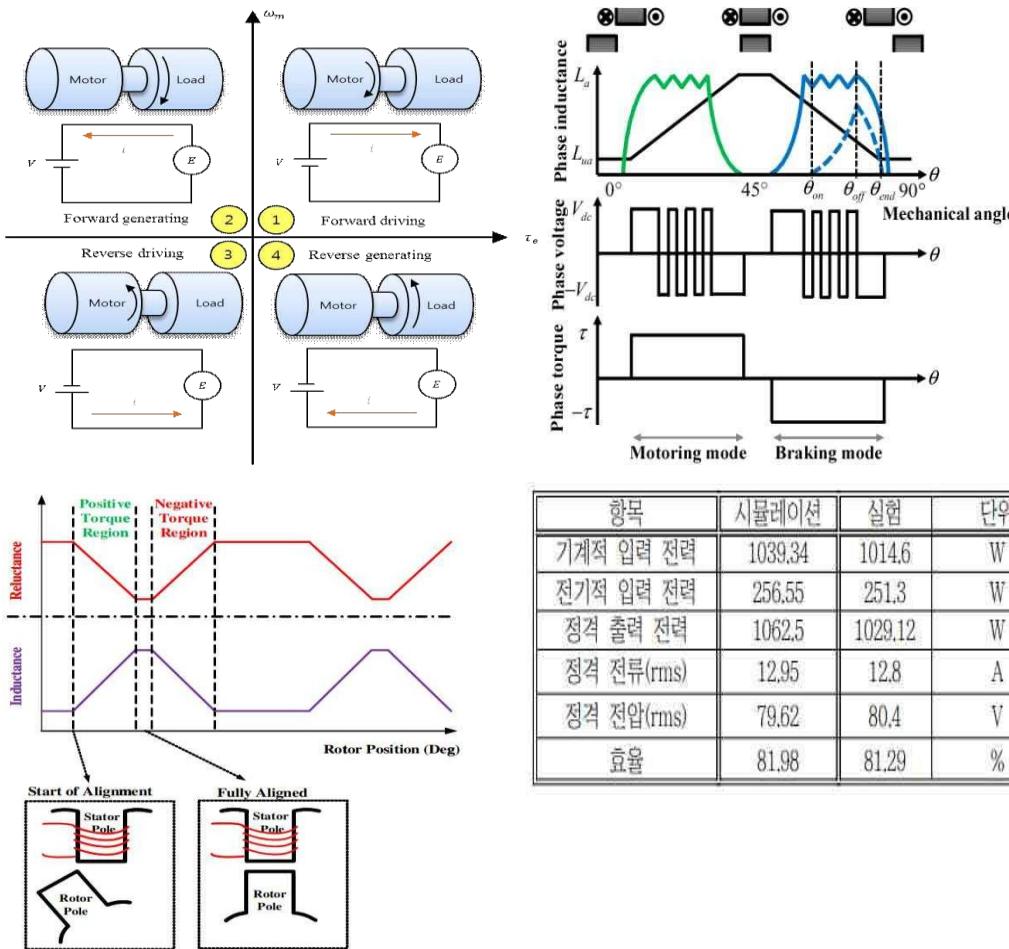
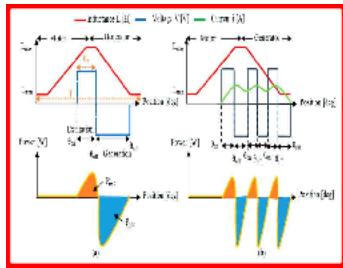


# Cogging-free Permanent Magnet

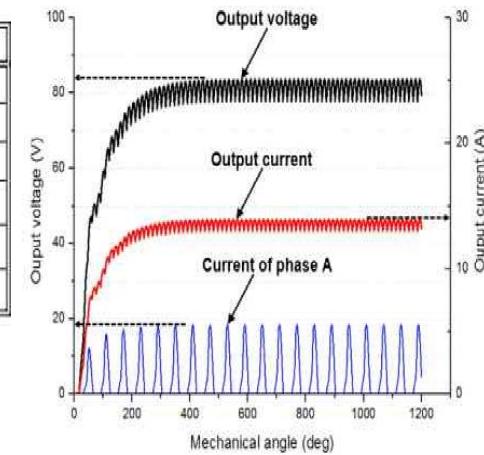
SRM "reverse + recovery (generation)" system

At the maximum inductance position  $\theta_{on}$

Current is applied to create magnetic flux, and then at the  $\frac{3}{4}$  position  $\theta_{off}$ , the generated magnetic flux and counter electromotive force are added to create the maximum generation current.

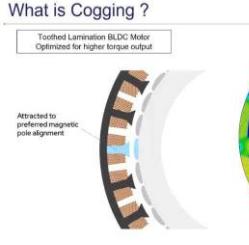
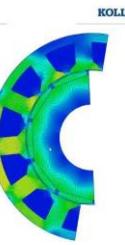
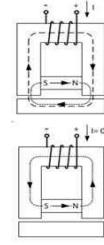
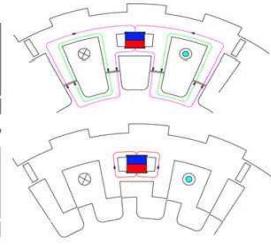
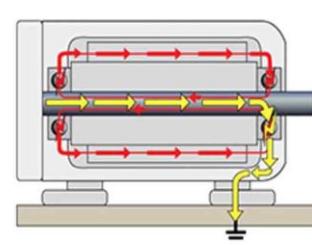


항목	시뮬레이션	실험	단위
기계적 입력 전력	1039.34	1014.6	W
전기적 입력 전력	256.55	251.3	W
정격 출력 전력	1062.5	1029.12	W
정격 전류(rms)	12.95	12.8	A
정격 전압(rms)	79.62	80.4	V
효율	81.98	81.29	%



# Cogging-free Permanent Magnet

## AHSRM(Stator-PM)

  <p>What is Cogging ? Toothed Lamination BLDC Motor Optimized for higher torque output</p>		  <p>KOLLMORGEN</p>	 <p>AHSRM (KOREA)</p>	
Cogging Torque	Stator-PM	AHSRM(Korea)	bearing Current	
<b>Cogging Torque ?</b> 1. Strong magnetic attraction between the permanent magnets of the rotor and the stator slots	<b>Cogging Torque(Free)</b> 1.The armature flux does not pass through the PM, so the reluctance of the armature magnetic path is reduced, and the armature current does not pose a risk of demagnetization of the magnet. 2.Reverse Bias Magnetic Field Design	1. High density high efficiency 2.No power generation voltage, no energy consumption due to field weakening control 3.Easy disassembly and assembly of the rotor, like an induction motor	<b>bearing Current(Free)</b> 1.Since the windings are symmetrically distributed, no shaft current is generated. 2.no neutral point, so there is no voltage imbalance.	

# Thank You



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