

PARANS



SP4 & PLT5 Sunlight System

Product Manual



PARANS—Leading natural sunlight

● Parans Sunlight System

Parans delivers zero-carbon natural sunlight to indoor environments and buildings through industry-leading fiber optic light guiding and solar tracking technology. The system captures and directs natural sunlight into and through the home - deep into the building and away from the windows - and spreads the light in a way that creates an unforgettable experience that improves and enhances the living environment.




SP4 Series

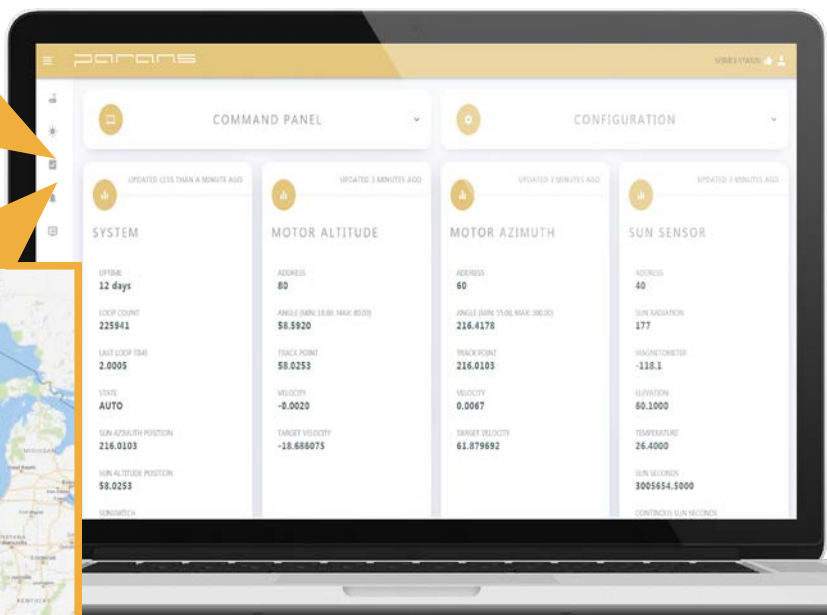
- Highest quality genuine natural sunlight;
- Customizable fiber/cable lengths of up to 500 meters;
- Modular daylighting units: 16-80 units of 100mm diameter; light-collecting lenses and 16-80 core energy fibers
- Optional full spectrum or visible spectrum natural sunlight;
- Connects to Parans Cloud for remote installation, debugging, fault diagnosis, and operational data collection.

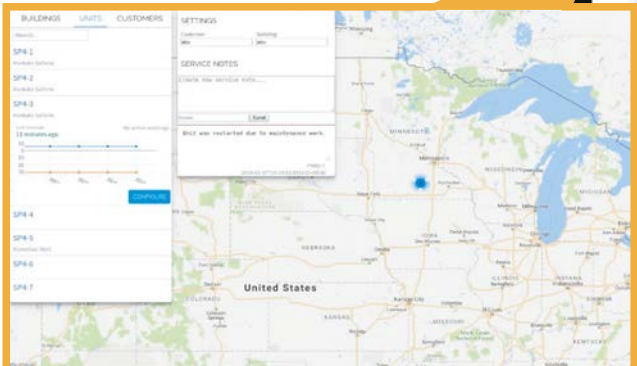
The SP4 series is specifically designed for large commercial enterprises, consisting of five models: SP4-8.2, SP4-12.2, SP4-16.2, SP4-24.2, and SP4-40.2. The SP4-40.2 model features 80 units of 100mm diameter light-collecting lenses, capable of delivering up to 100,000 lumens of visible spectrum natural sunlight and 800 watts of full spectrum natural sunlight per unit. Additionally, it integrates with the Parans Cloud big data operations platform, making it highly suitable for large commercial enterprises.



Parans Cloud O&M Platform makes remote installation, debugging, diagnostics, and maintenance services exceptionally simple







PLT5 Series

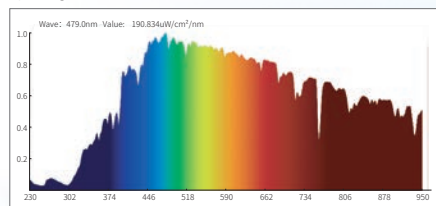
- Highest quality genuine natural sunlight;
- Customizable fiber/cable lengths of up to 500 meters;
- Integrated light panel design: available in two configurations - 10 units of 100mm diameter lenses and 16 units of 100mm diameter lenses;
- Optional full spectrum or visible spectrum natural sunlight;
- Bluetooth-enabled for effortless setup and operation; no manual configuration required. Simple plug-and-play functionality upon power connection.

The PLT5 series is tailored for residential use, offering affordability, lightweight construction, small size, easy installation, and user-friendly operation. Ideal for spaces lacking sunlight such as basements, north-facing rooms, bedrooms, closets, living rooms, kitchens, and bathrooms. Available in two models, PLT-5 and PLT-5e, integrating 10 and 16 units of 100mm diameter light-collecting lenses respectively, providing up to 6000 and 9600 lumens of visible natural sunlight, and 80W and 160W of full spectrum natural sunlight. These units are lightweight, compact, cost-effective, feature automatic solar tracking, simple installation, operation, and require no maintenance, making them perfect for small residential areas.



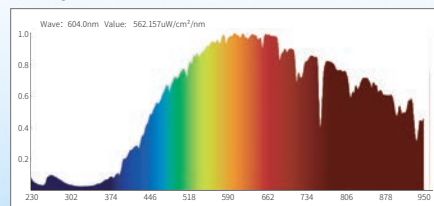
Parans sunlight is entirely derived from natural sunlight, collected and transmitted through Parans' high-fidelity optical system, essentially retaining all spectral components of natural sunlight. It's genuine natural sunlight! This is unparalleled by semiconductor LED sources or any other traditional electrical light sources!

Spectrogram



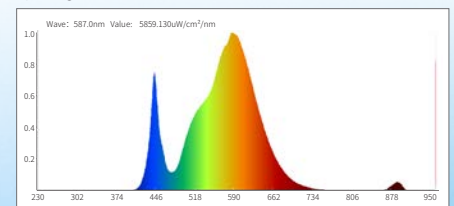
a. Natural sunlight

Spectrogram



b. Parans sunlight

Spectrogram



c. LED light source

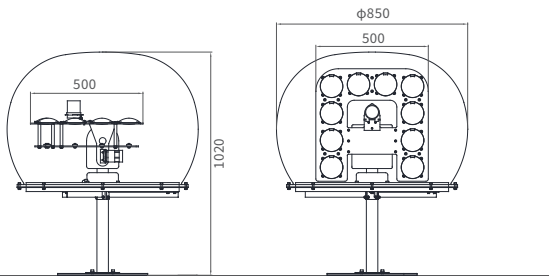
Technical Specifications

Type	PLT-5	PLT-5e	SP4-8.2	SP4-12.2	SP4-16.2	SP4-24.2	SP4-40.2	Memo
L * W * H (mm)	850*850*1020	850*850*1020	1100*850*820	1100*850*940	1950*1000*820	1950*1000*840	1950*1000*1120	
Weight (Kg)	36	40	60	65	75	85	95	
Quantity of fibers/lenses (pcs)	10	16	16	24	32	48	80	
Output solar power (W)	52 ~ 70	83 ~ 112	83 ~ 112	125 ~ 168	166 ~ 224	250 ~ 336	416 ~ 560	Only applicable to glass fiber Plastic fiber is 1.5 times more than glass fiber
Output visible flux (lm)	3500 ~ 5500	5600 ~ 8800	5600 ~ 8800	8400 ~ 13200	11200 ~ 17600	16800 ~ 26400	28000 ~ 44000	Only applicable to glass fiber Plastic fiber is 2 times more than glass fiber
Output wavelength (nm)	glass fiber: 150nm ~ 3000nm plastic fiber: 425nm ~ 700nm							Selectable spectrum range
Fiber core diameter and numerical aperture	glass fiber: OD = 1.2mm, NA = 0.48 plastic fiber: OD = 2.0mm, NA = 0.50							
Max. fiber length (m)	glass fiber: 500m plastic fiber: 50m							Attenuation loss confined
Minimum bend radius of the fiber (mm)	glass fiber: 180mm plastic fiber: 20mm							
Power supply & consumption	AC 110 ~ 250V, 50 ~ 60Hz; 0 ~ 5W		AC 110 ~ 250V, 50 ~ 60Hz; 0 ~ 12W					
Operating temperature (°C)	-40 ~ +60							
Relative humidity (%RH)	0 ~ 85%RH							
Material	Aluminum, Steel, Glass, PMMA							
IP rating(electronics)	IP66							
Connection (Optional)	Blue tooth		Network interface (WiFi/5G/4G/GPRS)					
Debugging and maintenance	~		AI Big Data Maintenance Platform					Parans Cloud
Sunlight luminaires	Point light, Zoom light, Ceiling light, Flat pannel light, Hybrid light, etc.							Accepts custom design

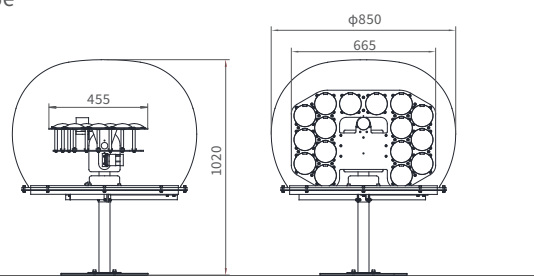
*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

1. Sunlight Collectors

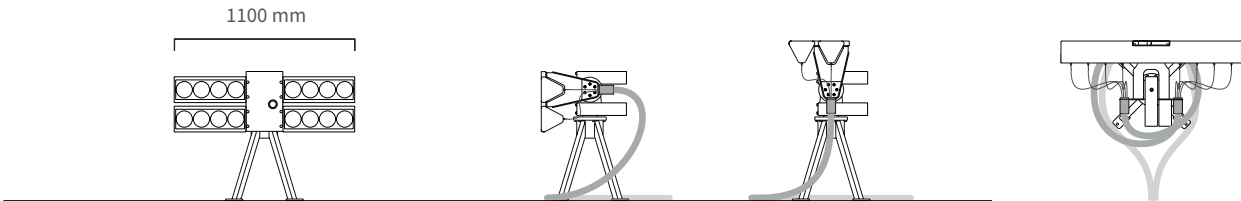
PLT-5



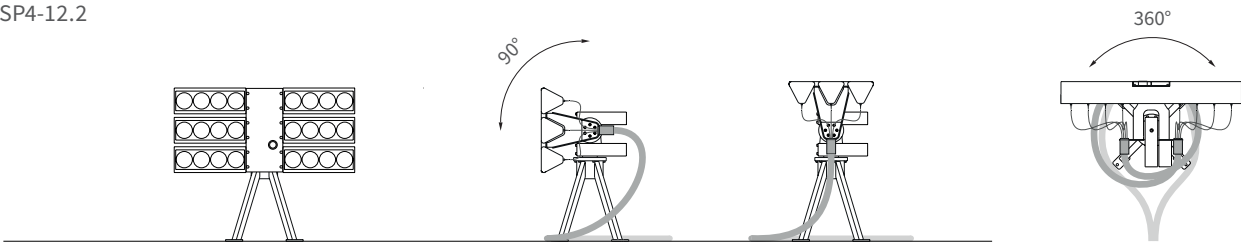
PLT-5e



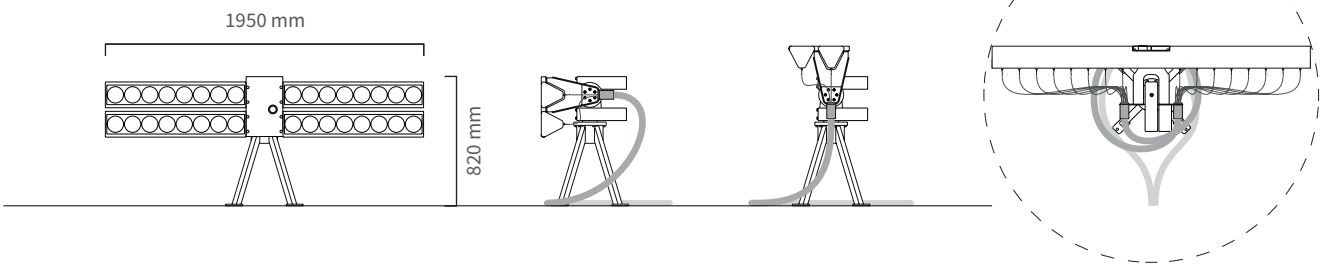
SP4-8.2



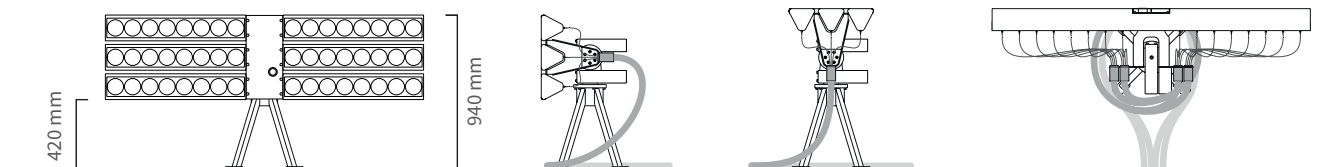
SP4-12.2



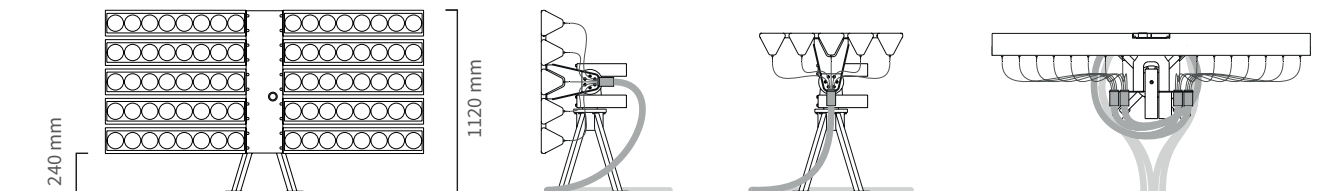
SP4-16.2



SP4-24.2



SP4-40.2



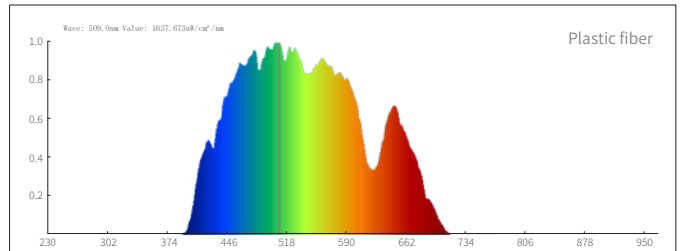
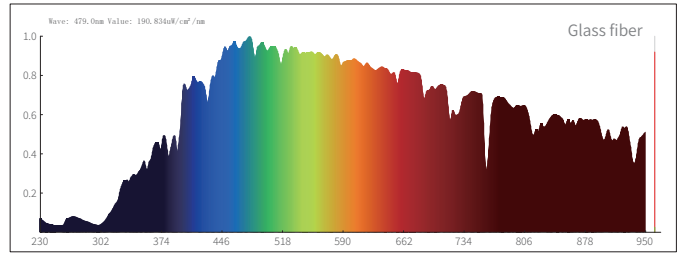
2. Energy Optical Fibers

2.1 Glass Optical Fiber & Plastic Optical Fiber

- Fiber Optic Technical Specifications

Characteristics	Glass fibers	Plastic fibers
Fiber structure	Step index	Step index
Numerical aperture	0.48+/-0.02	0.50+/-0.02
Core material	Glass	PMMA
Core OD (mm)	1.2	2
Attenuation Loss	0.01dB/m@600nm	0.1dB/m@600nm
Bending radius (mm)	>180	>20
Operating temperature (°C)	-65 to +140	-50 to +70
Output Light spectrum band(nm)	150 to 3000	425 to 700
Cost	High	Low
Cladding layer	Hard polymer	N/A
Standard buffer	Tefzel	Black polyethylene

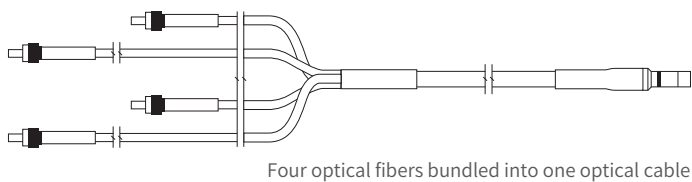
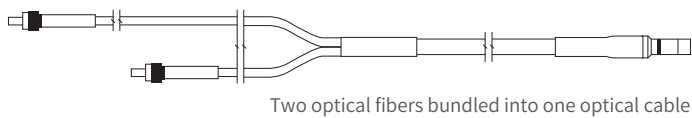
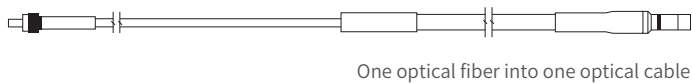
- Comparison of Spectral Characteristics



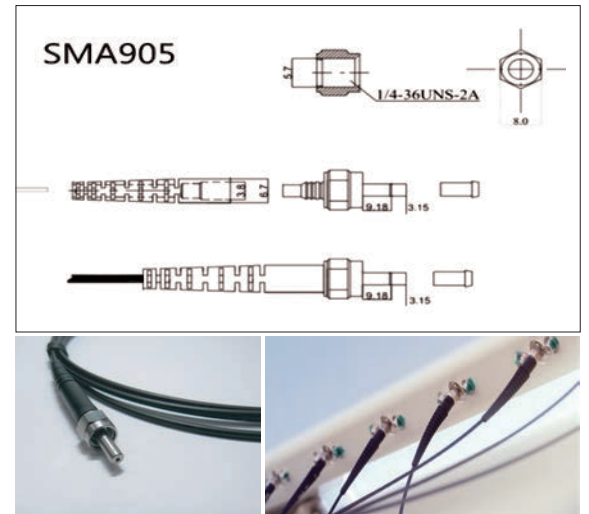
*Glass optical fibers excel in light transmission performance (spectrum range and attenuation) but cost several times more than plastic fibers. Specifically, in short-range visible light applications, plastic fibers offer a better cost-to-performance ratio.

2.2 Fiber Optic Connector

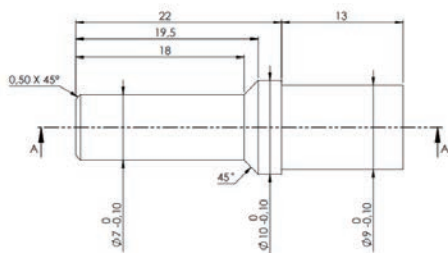
- Fiber Optic Jumper/Transmission Network



- Inlet Fiber Connector: SMA905 (Industry Standard)

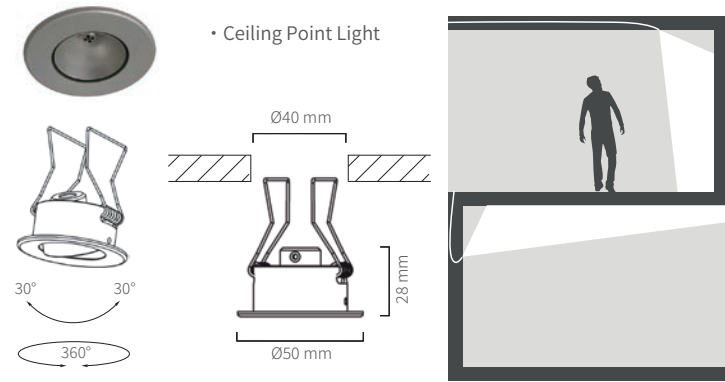
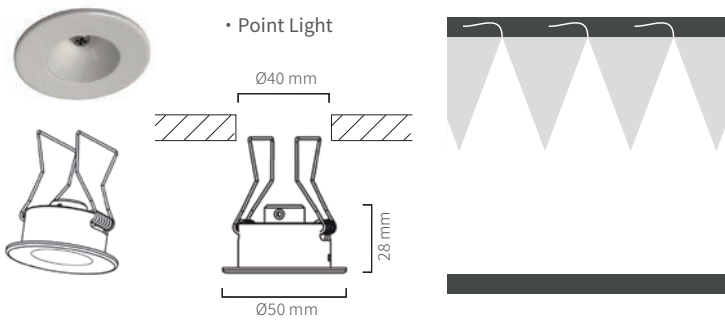


- Outlet Fiber Connector: Dual-core and Quad-core Fiber Connections (Parans Standard)



3. Sunlight Luminaires

3.1 Point Light-I

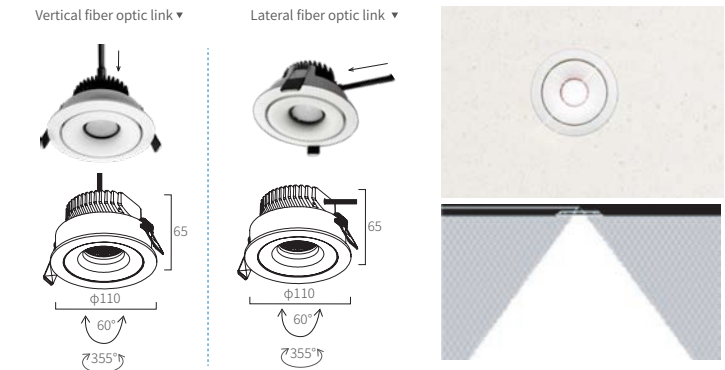


Luminaire Type	Point	Ceiling	Memo
Model	FRSL01	VRSL01	
Size (mm)	φ50 * 28	φ50 * 28	
Weight (Kg)	< 0.05	0.05	
Material	Aluminum	Aluminum	
Embedding Depth(mm)	210	210	
Connected optical fibers (pcs)	1 ~ 4	1 ~ 4	
Light output per fiber (lm)	350 ~ 550	350 ~ 550	Glass/Plastic Fiber
Light power per fiber (W)	10	10	Glass Fiber/full-spectrum Depends on numerical aperture
Divergent angle	58°	58°	
Tilt	N/A	30°	
Rotate	N/A	360°	
Mounting hole (mm)	40	40	
Mounting	Recessed, with spring	Recessed, with spring	
Ceiling type	Suspended Ceiling	Suspended Ceiling	

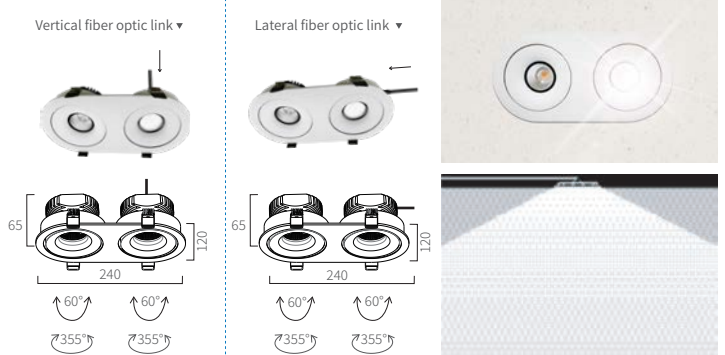
*All values are based on: 1) Standard 30 meters fiber cable ;
2) Solar illuminance of 100000 Lux, sunny day without smog.

3.2 Point Light-II

• Pure Point Light



• Hybrid Point Light

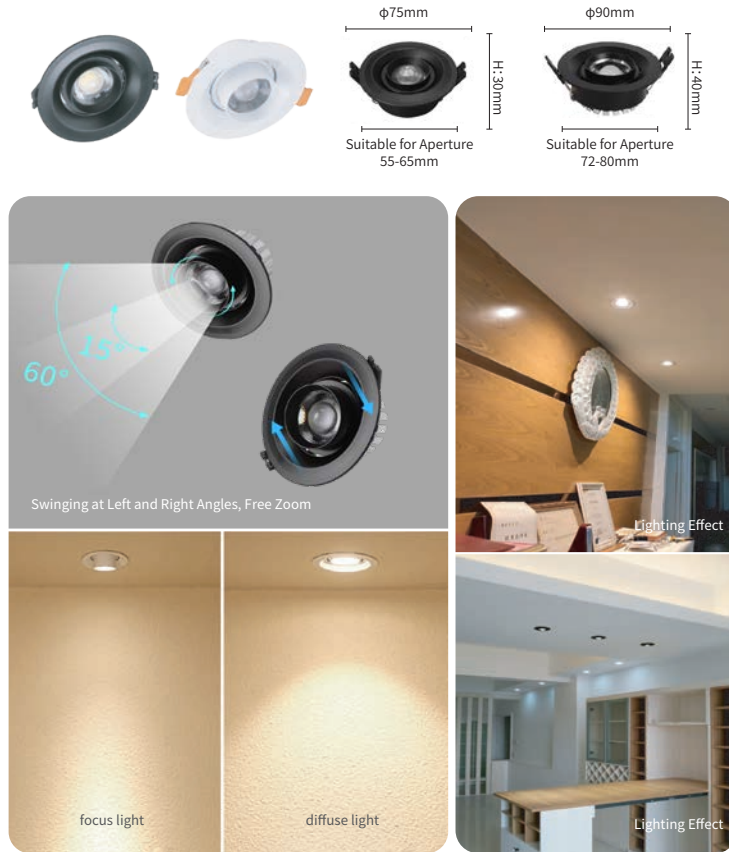


Luminaire Type	Pure	Hybrid	Memo
Model	PRBL01	HRBL01	
Size (mm)	110*110*65	240*120*65	
Weight (Kg)	0.5	0.95	
Material	Aluminum	Aluminum	
Embedding Depth(mm)	250 / 65	250 / 65	Vertical / Lateral Fiber
Connected optical fibers(pcs)	2 ~ 4	2 ~ 4	
Light output per fiber (lm)	350 ~ 550	350 ~ 550	Glass/Plastic Fiber
Light power per fiber (W)	10	10	Glass Fiber/full-spectrum
LED lighting efficacy (lm/W)	N/A	755	
LED power (W)	N/A	12	
Divergent angle	58°	90°	
Tilt	60°	60°	
Rotate	355°	355°	
Protection rating	IP20	IP20	
Mounting hole (mm)	100	2 x 100~110	
Mounting	Recessed, with spring	Recessed, with spring	
Ceiling type	Suspended Ceiling	Suspended Ceiling	
Color	White/Black	White/Black	

*When natural sunlight is low, LEDs compensate. Manual or smart adjustment with DALI/DSI drivers for intelligent light supplementation.

*All values are based on: 1) Standard 30 meters fiber cable ;
2) Solar illuminance of 100000 Lux, sunny day without smog.

3.3 Zoom Point Light



Luminaire Type	Zoom Point Light		Memo
Model	ZCSL01	ZCSL02	
Size (mm)	$\phi 75 \times 30$	$\phi 90 \times 40$	
Weight (Kg)	0.12	0.12	
Material	Aluminum	Aluminum	
Embedding Depth (mm)	250	250	
Connected optical fibers (pcs)	2 ~ 4	2 ~ 4	
Light output per fiber (lm)	350 ~ 550	350 ~ 550	Glass/Plastic Fiber
Light power per fiber (W)	10	10	Glass Fiber/full-spectrum
Divergent angle	15 ~ 60°	15 ~ 60°	
Tilt	60°	60°	
Rotate	360°	360°	
Protection rating	IP44	IP44	
Mounting hole (mm)	55 ~ 65	72 ~ 80	
Mounting	Recessed, with spring	Recessed, with spring	
Ceiling type	Suspended Ceiling	Suspended Ceiling	
Color	White/Black	White/Black	

*All values are based on: 1) Standard 30 meters fiber cable ;
2) Solar illuminance of 100000 Lux, sunny day without smog.

3.4 Zoom Hose Point Light



Luminaire Type	Surface mount	Track	Memo
Model	ZSSL01	ZSSL02	
Size (mm)	$\phi 41 \times 414$	$\phi 41 \times 411$	
Weight (Kg)	0.2	0.2	
Material	Aluminum	Aluminum	
Embedding Depth (mm)	250	250	
Connected optical fibers (pcs)	2 ~ 4	2 ~ 4	
Light output per fiber (lm)	350 ~ 550	350 - 550	Glass/Plastic Fiber
Light power per fiber (W)	7 ~ 10	7 ~ 10	Glass Fiber/full-spectrum
Divergent angle	15 ~ 45°	15 ~ 45°	Freely Adjustable
Tilt	-90 ~ +90°	-90 ~ +90°	
Rotate	360°	360°	
Protection rating	IP44	IP44	
Mounting	surface mounted, with screws	surface mounted, with screws	
Ceiling type	Suspended Ceiling	Suspended Ceiling	
Color	White/Black	White/Black	

*All values are based on: 1) Standard 30 meters fiber cable ;
2) Solar illuminance of 100000 Lux, sunny day without smog.

3.5 Zoom Tube Point Light



Luminaire Type	Surface mount	Track	Memo
Model	ZDSL-01	ZDSL-02	
Size (mm)	φ41*194	φ41*191	
Weight (Kg)	0.2	0.2	
Material	Aluminum	Aluminum	
Embedding Depth (mm)	250	250	
Connected optical fibers (pcs)	2 ~ 4	2 ~ 4	
Light output per fiber (lm)	350 ~ 550	350 ~ 550	Glass/Plastic Fiber
Light power per fiber (W)	10	10	Glass Fiber/full-spectrum
Divergent angle	15 ~ 60°	15 ~ 50°	Freely Adjustable
Tilt	-60 ~ +60°	-60 ~ +60°	
Rotate	360°	360°	
Protection rating	IP44	IP44	
Mounting	surface mounted, with screws	surface mounted, with screws	
Ceiling type	Suspended Ceiling	Suspended Ceiling	
Color	White/Black	White/Black	

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.6 Recessed Downlight Serie-I



Luminaire Type	2.5" Downlight		4" Downlight		6" Downlight		8" Downlight	
Light source	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light
Model	PRD01	HRD01	PRD02	HRD02	PRD03	HRD03	PRD04	HRD04
Size (mm)	φ100*30	φ100*30	φ145*30	φ145*30	φ180*30	φ180*30	φ230*30	φ230*30
Weight (Kg)	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5
Material	Aluminum alloy +PC							
Opening Size(mm)	75 ~ 85	75 ~ 85	110 ~ 135	110 ~ 135	146 ~ 165	146 ~ 165	190 ~ 210	190 ~ 210
Connected optical fibers (pcs)	2				4			
Light output per fiber (lm)	350 ~ 550							
LED lighting efficacy (lm/W)		90 ~ 130		90 ~ 130		90 ~ 130		90 ~ 130
LED power (W)	~	7	~	15	~	24	~	36
Divergent angle	90°	120°	90°	120°	90°	120°	90°	120°
Protection rating	IP20							
Mounting	Recessing							

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.7 Recessed Downlight Series-II



Luminaire Type	2.5" Downlight		4" Downlight		6" Downlight		8" Downlight	
Light source	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light
Model	PRTD01	HRTD01	PRTD02	HRTD02	PRTD03	HRTD03	PRTD04	HRTD04
Size (mm)	φ90*20	φ90*20	φ145*20	φ145*20	φ190*20	φ190*20	φ225*20	φ225*20
Weight (Kg)	0.2	0.2	0.3	0.3	0.31	0.31	0.34	0.34
Material	Aluminum alloy +PC							
Opening Size(mm)	75	75	130	130	170	170	210	210
Connected optical fibers (pcs)	2				4			
Light output per fiber (lm)	350 ~ 550							
LED lighting efficacy (lm/W)	~	90 ~ 130	~	90 ~ 130	~	90 ~ 130	~	90 ~ 130
LED power (W)	~	3	~	9	~	15	~	18
Divergent angle	90°	120°	90°	120°	90°	120°	90°	120°
Protection rating	IP20							
Mounting	Recessing							

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.8 Ceiling-mount Cylinder Light



Luminaire Type	7w		12w		18w		24w	
Light source	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light
Model	PRCD01	HRCD01	PRCD02	HRCD02	PRCD03	HRCD03	PRCD04	HRCD04
Size (mm)	φ100*35	φ100*35	φ135*35	φ135*35	φ175*35	φ175*35	φ230*35	φ230*35
Weight (Kg)	0.16	0.16	0.23	0.23	0.35	0.35	0.55	0.55
Material	Aluminum alloy +PC							
Connected optical fibers (pcs)	2 ~ 4				4 ~ 8			
Light output per fiber (lm)	350 ~ 550							
LED lighting efficacy (lm/W)	~	90 ~ 130	~	90 ~ 130	~	90 ~ 130	~	90 ~ 130
LED power (W)	~	7	~	12	~	18	~	24
Divergent angle	90°	120°	90°	120°	90°	120°	90°	120°
Protection rating	IP20							
Mounting	surface mounting							

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.9 Circular Flat Panel Light

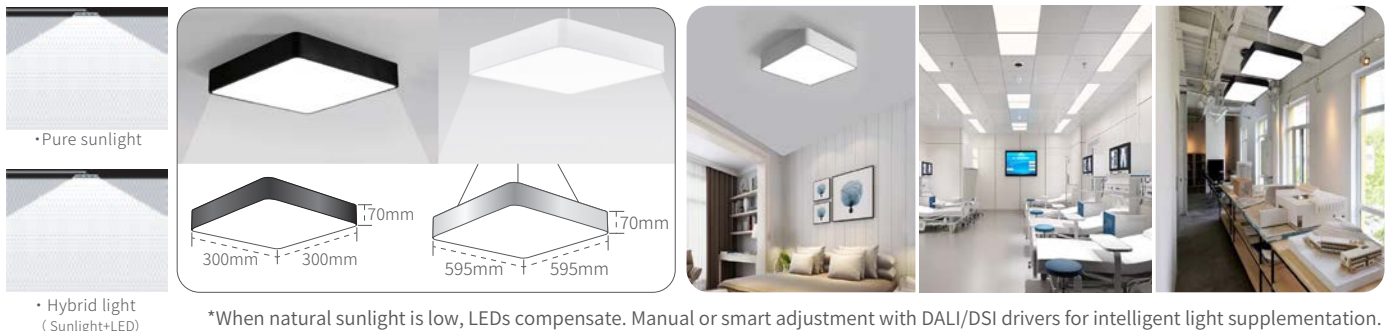


*When natural sunlight is low, LEDs compensate. Manual or smart adjustment with DALI/DSI drivers for intelligent light supplementation.

Luminaire Type	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light
Model	FPC-P01	FPC-H01	FPC-P02	FPC-H02
Size (mm)	φ400*70	φ400*70	φ600*70	φ600*70
Weight (Kg)	0.5	0.5	0.8	0.8
Material	Aluminum alloy + PC			
Connected optical fibers (pcs)	4 ~ 8		8 ~ 16	
Light output per fiber (lm)	350 ~ 550			
Full spectrum power per fiber (W)	6 ~ 10			
LED lighting efficacy (lm/W)	70 ~ 100			
LED power (W)	N/A	22	N/A	80
Divergent angle	120°			
Protection rating	IP20			
Mounting	surface mounting, false ceiling			
Intelligent Lighting Control	None	Yes	None	Yes

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.10 Square Flat Panel Light

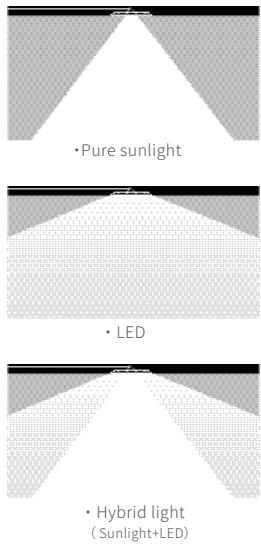


*When natural sunlight is low, LEDs compensate. Manual or smart adjustment with DALI/DSI drivers for intelligent light supplementation.

Luminaire Type	Pure Sunlight	Hybrid light	Pure Sunlight	Hybrid light
Model	FPS-P01	FPS-H01	FPS-P02	FPS-H02
Size (mm)	300*300*70	300*300*70	595*595*70	595*595*70
Weight (Kg)	0.52	0.52	1	1
Material	Aluminum alloy + PC			
Connected optical fibers (pcs)	6 ~ 8		8 ~ 16	
Light output per fiber (lm)	350 ~ 550			
Full spectrum power per fiber (W)	6 ~ 10			
LED lighting efficacy (lm/W)	70 ~ 100			
LED power (W)	22		80	
Divergent angle	120°			
Protection rating	IP20			
Mounting	Recessing, surface mounting, false ceiling			

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.

3.11 Anti-Glare Recessed Flat Panel Light



Fits US standard: 2 x 2 ft



*When natural sunlight is low, LEDs compensate. Manual or smart adjustment with DALI/DSI drivers for intelligent light supplementation.

Luminaire Type	Pure Sunlight	Hybrid light	Memo
Model	GFPS-P01	GFPS-H02	Anti-glare
Size (mm)	595*595*110	595*595*110 mm	
Weight (Kg)	7	7	
Material	PMMA, PC, Aluminum	PMMA, PC, Aluminum	
Embedding Depth (mm)	300	300	Including connectors
Connected optical fibers (pcs)	4 ~ 8	4 ~ 8	
Light output per fiber (lm)	350 ~ 550	350 ~ 550	Glass/Plastic Fiber
Full spectrum power per fiber (W)	7 ~ 10	7 ~ 10	Glass Fiber
LED light output (lm)	N/A	990	
LED Power (W)	N/A	15	
Mounting	Recessed, replaces grating	Recessed, replaces grating	
Ceiling type	Suspended Ceiling	Suspended Ceiling	

*All values are based on: 1) Standard 30 meters fiber cable ; 2) Solar illuminance of 100000 Lux, sunny day without smog.



● Application Scenarios and Cases

1、Application Scenarios

Parans Sunroom consists of four parts: Sunlight Illumination, Sunlight Hygiene, Sunlight Ecology, Sunlight Massage.



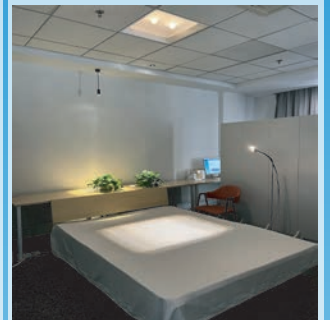
Sunlight Illumination



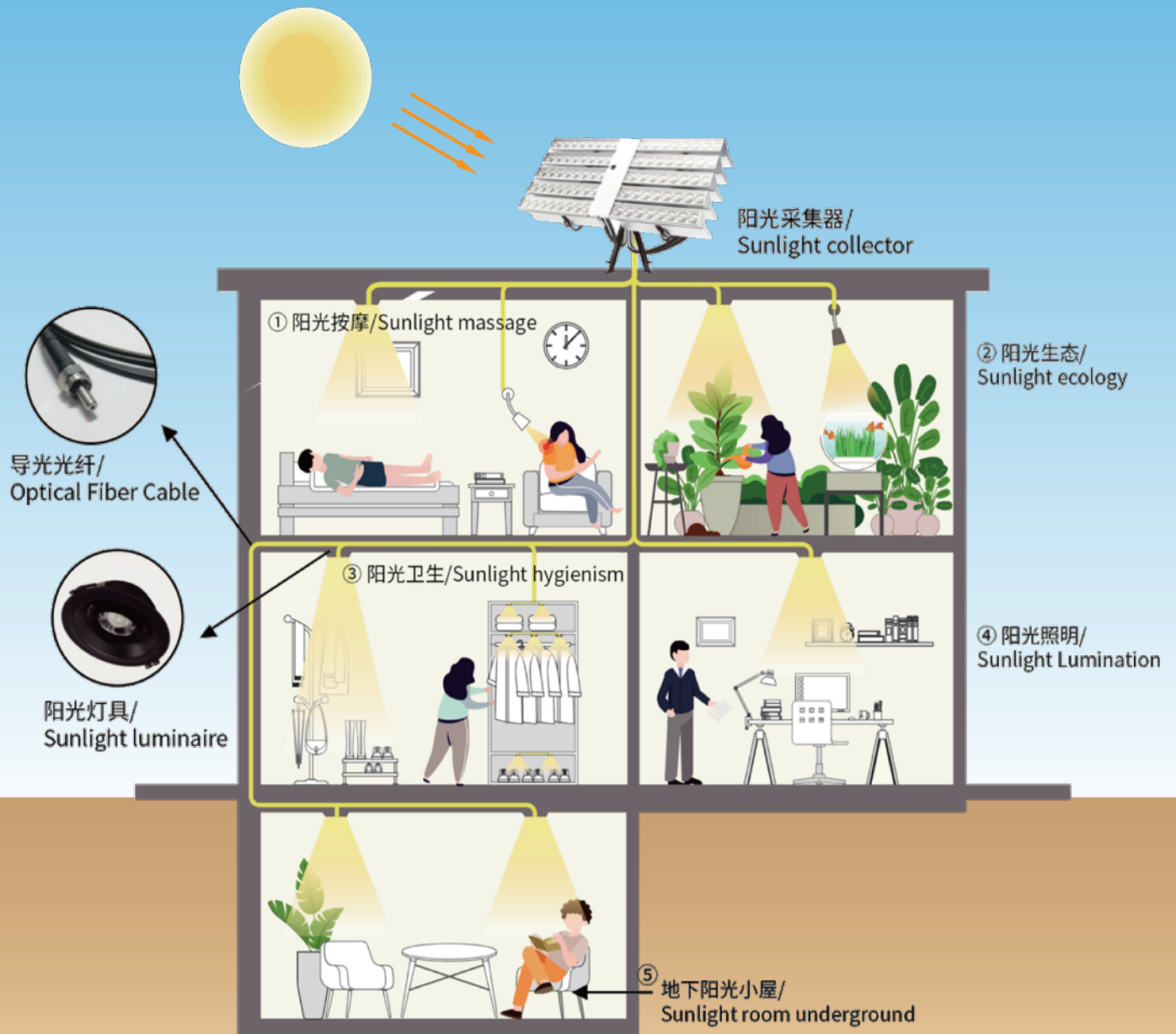
Sunlight Hygiene



Sunlight Ecology



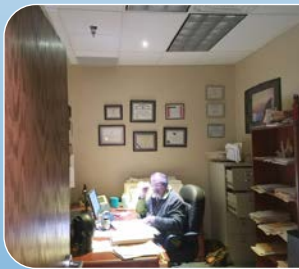
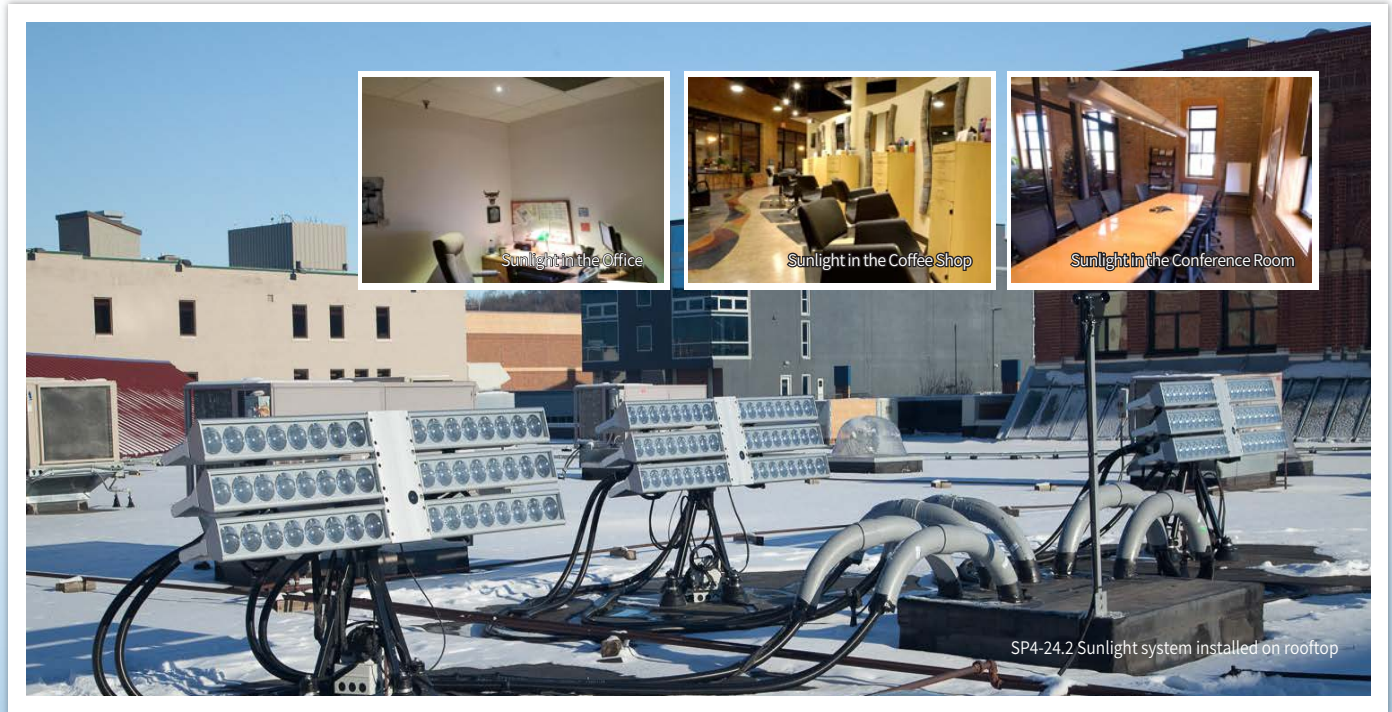
Sunlight Massage



2. Application Cases

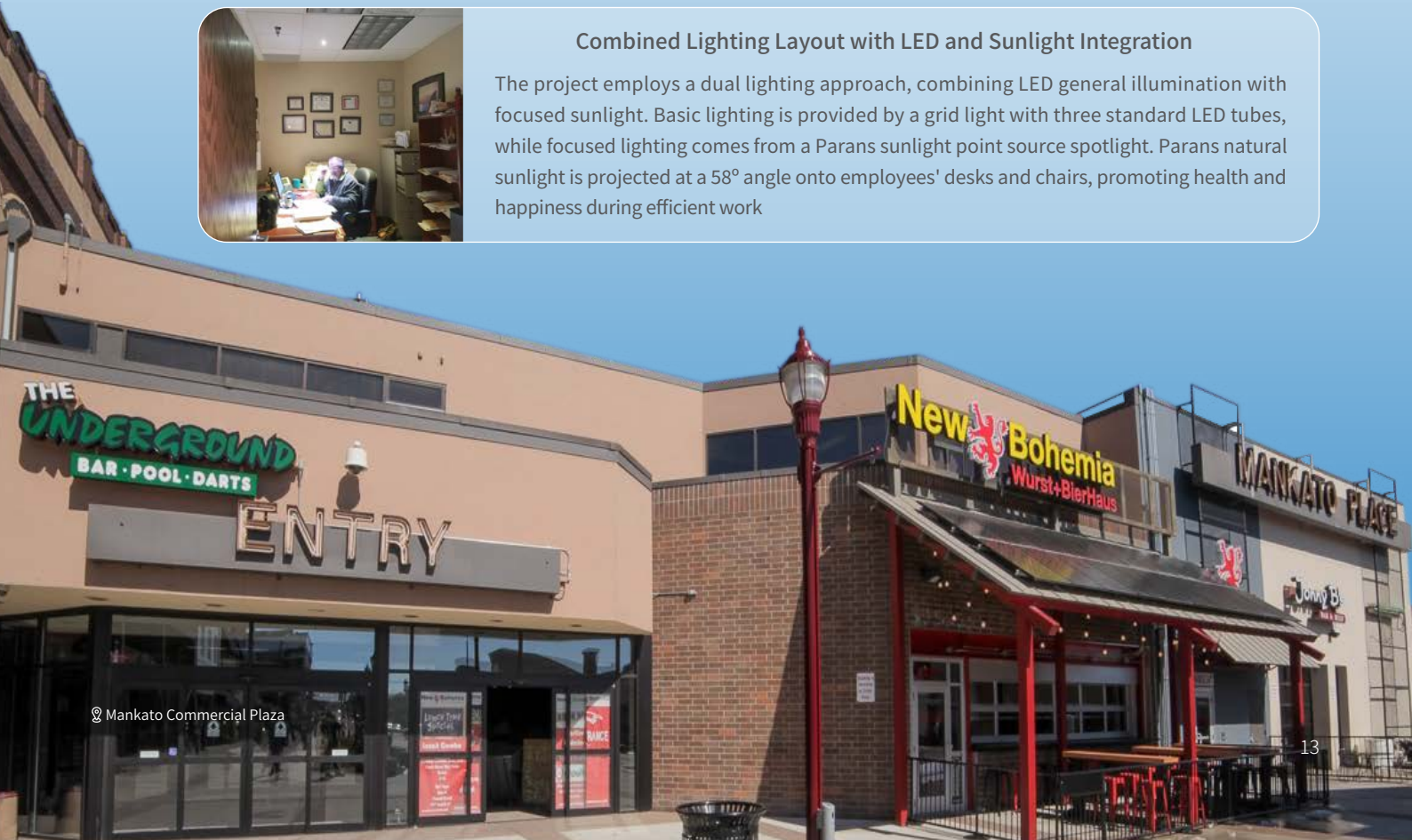
2.1 Minnesota Mankato Place Sunlight Project

Mankato Place in the United States installed three Parans SP4-24.2 natural sunlight systems, along with 48-core energy fiber optics and 20 sunlight fixtures. This brought 70,000 lumens of visible light/1400 watts full-spectrum natural sunlight into various spaces such as offices, meeting rooms, restaurants, and entertainment halls. The system not only achieved carbon-neutral green lighting but also provided an exceptional experience for employees and customers, turning it into a popular local attraction.



Combined Lighting Layout with LED and Sunlight Integration

The project employs a dual lighting approach, combining LED general illumination with focused sunlight. Basic lighting is provided by a grid light with three standard LED tubes, while focused lighting comes from a Parans sunlight point source spotlight. Parans natural sunlight is projected at a 58° angle onto employees' desks and chairs, promoting health and happiness during efficient work.



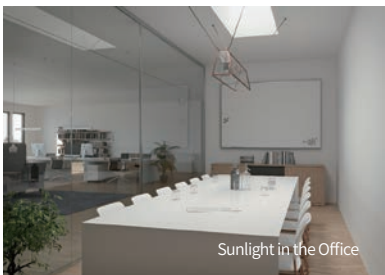
2.2 UJVN Ltd Headquarters Sunlight Project, North Akhand, India



Five SP4-40.2 Parans sunlight systems installed on the rooftop

UJVN, India's pioneering hydroelectric company, dedicated to sustainable energy, faced challenges at its 36-story headquarters with numerous rooms lacking sunlight. This led to a proportion of employees experiencing low morale and occasional cases of depression. To enhance the work environment, the company purchased and installed 5 SP4-40.2 Parans natural sunlight systems, featuring a total of 400-core energy fiber optics. This setup delivers 250,000 lumens of visible light/3000 watts full-spectrum natural sunlight, covering an area of approximately 1000 square meters and saving 20,000 kWh of lighting electricity annually. In addition, employees responded positively to the warm and comfortable ambiance created by sunlight, resulting in increased work efficiency and a notably positive shift in mood, effectively mitigating depression.

This project at the UJVN Ltd headquarters in North Akhand, India, utilized intelligent hybrid light fixtures. In situations of insufficient or no sunlight, the LED light sources automatically activate to supplement the missing sunlight, ensuring consistent indoor brightness. This innovative approach enhances lighting efficiency and maintains a stable illumination level, contributing to an improved and sustainable lighting solution for the office building



Sunlight in the Office

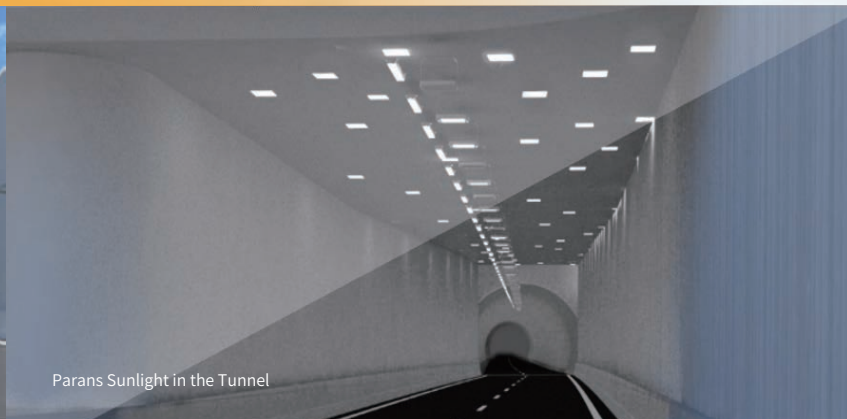


Sunlight in the Meeting Room



Sunlight in the Office

2.3 The Rijnlands Tunnel Sunlight Project in the Netherlands



Parans Sunlight in the Tunnel

The Rijnlands Tunnel Lighting Project in the Netherlands has successfully completed, with an investment exceeding 1.69 million euros, installing a total of 80 sets of SP4-40.2 Palance natural sunlight illumination systems. The project has been completed smoothly and passed the acceptance inspection.

Both entrances of the Rijnlands Tunnel in the Netherlands are illuminated by Parans natural sunlight. Utilizing nearly a hundred Parans sunlight systems in an unprecedented manner, natural sunlight is introduced into the tunnel, minimizing the risk of a 'black hole' effect and ensuring optimal safety for road traffic. Notably, the Rijnlands Tunnel project received the Innovative Design Challenge Award in a nationwide competition in the Netherlands, largely due to the Parans sunlight system's ability to efficiently transport natural sunlight into the deep areas of the tunnel in a carbon-neutral way.

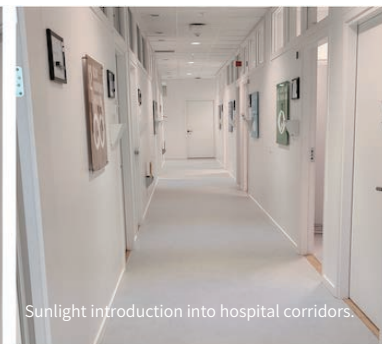
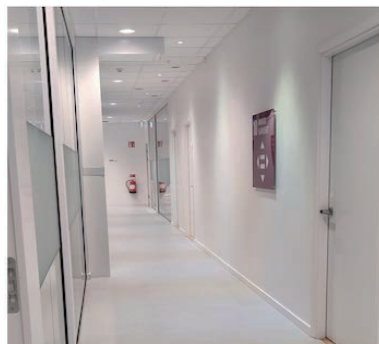
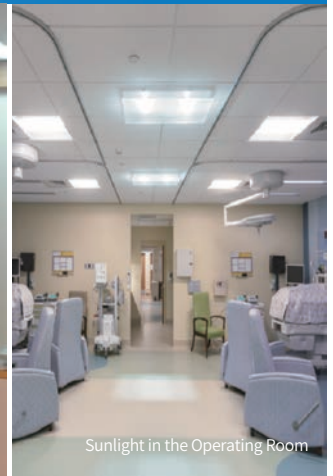


The installation site of 80 SP4-40.2 Parans Natural Sunlight Systems.



© Installation site of 80 SP4-40.2 Parans natural sunlight systems

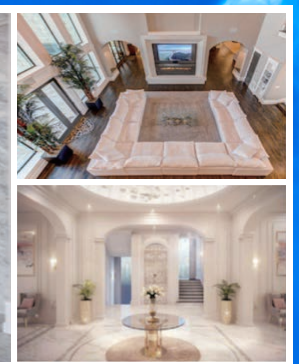
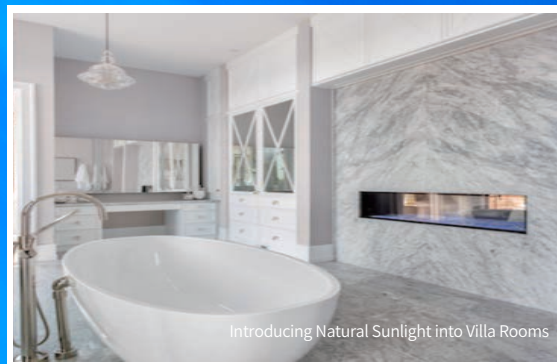
2.4 Helsingborg Hospital Project



Helsingborg Hospital enhanced the ambiance in outpatient rooms, operating theaters, and corridors by installing a SP4-40.2 and SP4-24.2 Parans real natural sunlight rays Sunlight System. Doctors and patients now experience “We appreciate the sunlight we get through the Parans system” , says Lennart Sandhall, Chief Physician, Helsingborg Hospital, Sweden, “ It gives us a clear connection to the outside. If the sun is shining, we are almost able to set the clock according to how the light is shifting.”

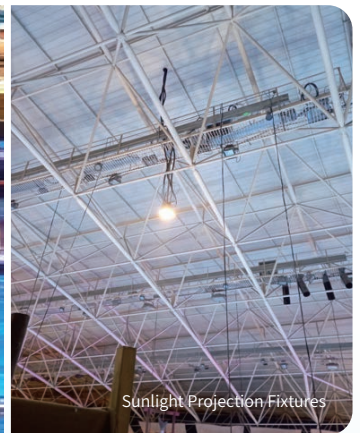
2.5 The Haier Bordeaux Town Villa Project

The Haier Real Estate Bordeaux Town project, located in Laoshan District, Qingdao, installed a total of 16 sets of PLT-5 Parans Natural Sunlight Systems in 8 villa model houses. This initiative aims to enhance the living environment within the villa rooms. Parans Natural Sunlight contains rich ultraviolet, visible light, and infrared components. Besides serving as a carbon-neutral lighting source, it also assists in sterilization, dehumidification, odor elimination, and overall improvement of indoor air quality.



Two PLT5 Installed on Villa Rooftop

2.6 Qingdao Polar Ocean World Seal Pavilion Project



Sunlight is the fundamental condition for the survival of all things in the world. Everything grows relying on sunlight. As an ecological and cyclical biosphere, an aquarium cannot ensure the health and vitality of organisms without sunlight.

Compared to typical artificial lighting sources, sunlight is considered to have the highest light levels required for biological functionality. Sunlight serves as an excellent disinfectant, capable of eliminating many pathogenic microorganisms, including bacteria, fungi, rickettsiae, viruses, and algae, without pollution or side effects. The ultraviolet and infrared segments in sunlight also contribute to sterilizing and disinfecting the skin and fur of furry creatures, providing essential nutrients that play a crucial role in their health. Out of love for marine animals, the Polar Ocean World has chosen to use the Parans sunlight system to provide natural sunlight for them.

Parans has designed a natural sunlight spectrum for the Polar Ocean World. In this spectrum, ultraviolet light prevents various skin diseases in seals. Specific formula lamps are used as the light source, targeting the skin through the photoelectric, biological, and photochemical effects of light quantum beams of specific wavelengths, reaching the mid-shallow layer of the dermis through the skin. The mechanism for treating skin diseases involves inducing cell apoptosis, particularly immune T cell apoptosis. Through illumination, it significantly inhibits the activity of antigen-presenting cells such as epidermal Langerhans cells, reducing epidermal inflammatory reactions. Simultaneously, it enhances the metabolic function and immunity of organisms, achieving therapeutic goals.

Natural light is projected into the seal pool, forming an intense light spot of approximately 15 square meters with a visible light intensity of about 3000 lux, along with rich ultraviolet and infrared light. The project utilizes approximately 10 meters of fiber optic cables to install the SP4-40.2 (80 light points) Parans sunlight system on the museum roof to introduce sunlight.

The Parans sunlight system can offer its unique value solution without being influenced by any structural design of the building, bringing sunlight indoors to enhance indoor comfort and provide ample indoor sunlight. Parans Sunlight, the best light for humanity!



2.7 IMPULSE Fitness Club Ecological Environment Improvement Project

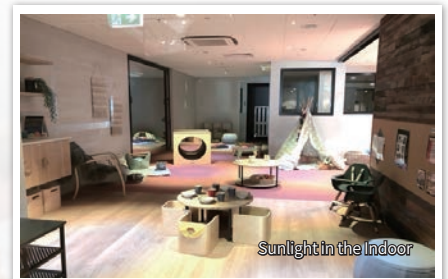
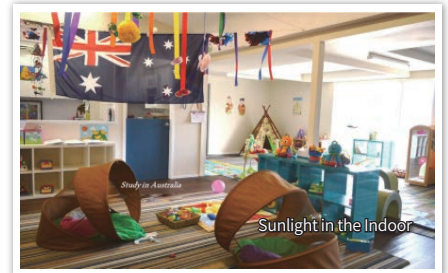


IMPULSE Fitness Club recently installed the Parans sunlight system. By projecting Parans natural sunlight onto the treadmills in the gym, people can enjoy outdoor natural sunlight while running. Additionally, by projecting Parans natural sunlight onto the plants inside the gym, the air quality has significantly improved through the plants' photosynthesis, removing harmful gases and promoting the generation of fresh air and negative ions.

2.8 Learn & Laugh Kindergarten Sunlight Project in Sydney, Australia

In a kindergarten in Sydney, Australia, natural light is very limited due to the surrounding large office and residential buildings, a common occurrence in big cities. Children play and learn here, spending crucial moments of their day. The challenge was to meet legislative requirements for daylight levels. To introduce natural light and meet daylight requirements, the client chose to install the Parans sunlight system. The contractor was approved to use the Parans system to achieve the required daylight levels. With around 2,500 hours of sunlight annually in Sydney, all these hours of sunshine can be harnessed, allowing natural light to fill the rooms.

After the installation of the Parans natural sunlight system, sunlight penetrates the building. Children bask in natural sunlight, leading to a significant improvement in their learning interest and efficiency, earning high praise from parents.



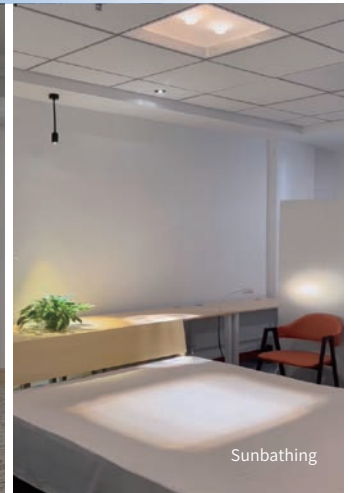
2.9 Auckland Elderly Apartment Sunbathing Project, New Zealand



Auckland Senior Apartments



Sunbathing

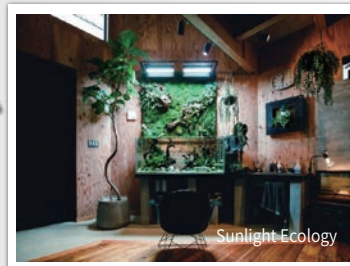


Sunbathing

New Market Senior Apartments in New Zealand consist of 80 senior units/beds, each accommodating one elderly individual or a couple. To allow the elderly to sunbathe in bed on sunny days, the client incorporated two SP4-40.2 Parans natural sunlight systems in the design. Each bed is equipped with a sunlight fixture connected to two fiber optic strands, projecting 2000 lumens of visible light/20 watts of full-spectrum natural sunlight energy into a 1-square-meter area, providing sunlight massage for the elderly. As a result, seniors can enjoy sunlight massage (sunbathing) without leaving their homes.

Sunbathing has various health benefits, such as boosting the immune system and reducing the risk of colds. From the perspective of traditional Chinese medicine, improving health involves getting more sunlight to generate clear Yang energy in the body, ultimately achieving the effects of nourishing Yang energy and promoting positive Qi. Adequate Yang energy is essential for the normal functioning of internal organs, enhancing the body's ability to resist diseases. Regular sunbathing helps strengthen the body, improve overall health, and supplement Vitamin D, effectively reducing the risk of common respiratory diseases and flu viruses. For elderly individuals who may have mobility challenges or cannot leave their beds, 'sunbathing' becomes an unattainable activity. Parans sunlight collection and transmission technology precisely addresses this challenge, bringing sunshine into the lives of the elderly in their later years!

2.10 Sunlight Hotel Project in Silicon Valley, India



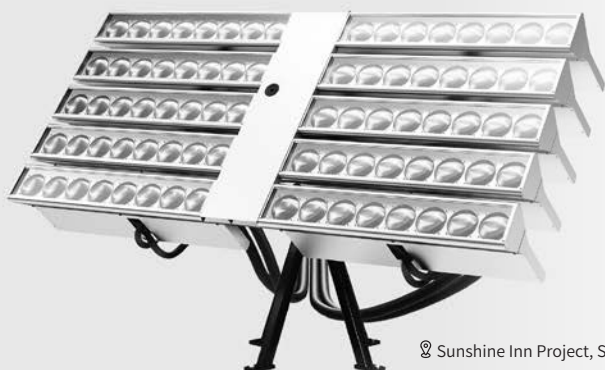
Sunlight Ecology



Sunlight Ecology



Sunlight in the Hotel

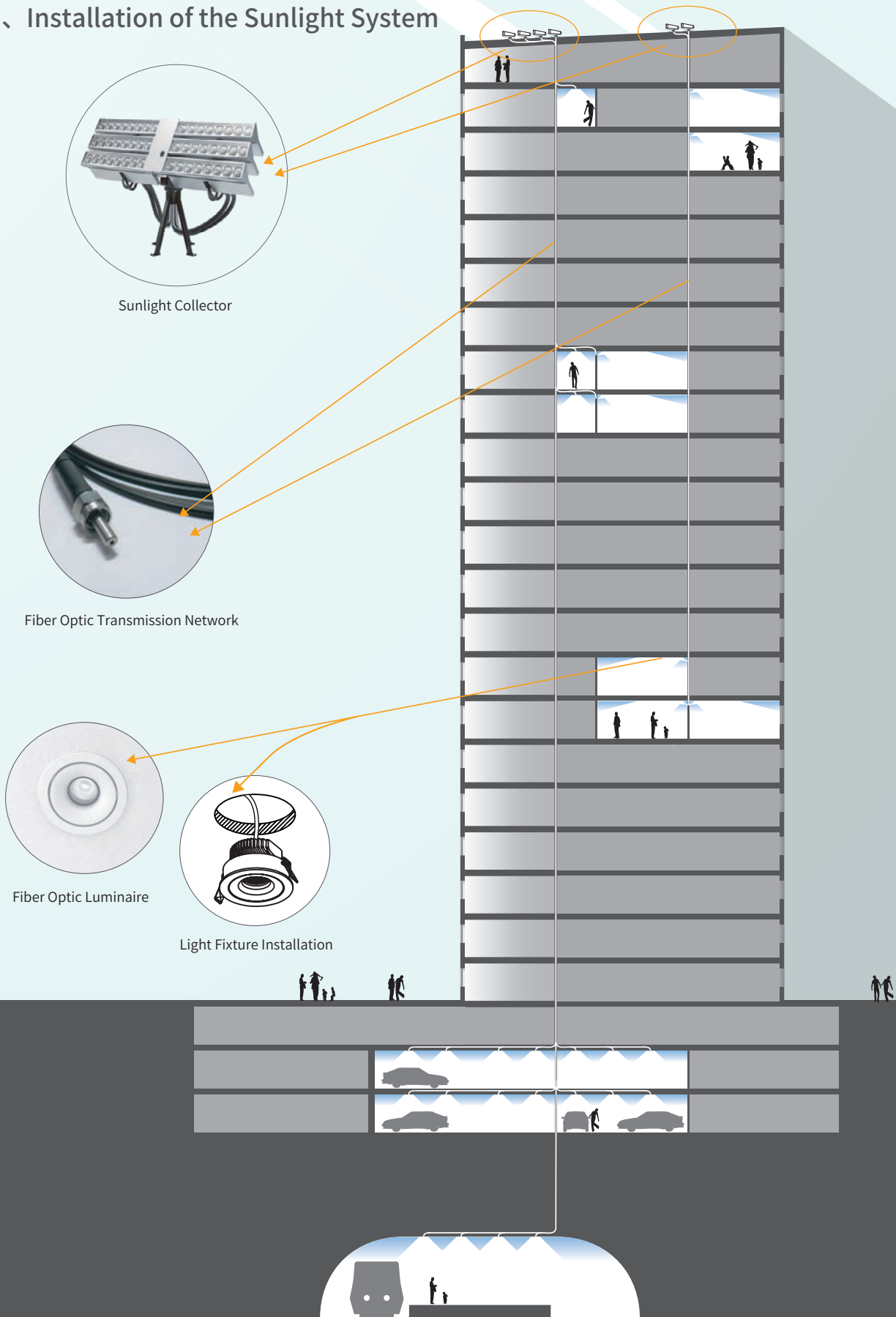


☺ Sunshine Inn Project, Silicon Valley, India

A hotel located in the Silicon Valley of India chose 2 SP4-40.2 Parans sunlight systems to provide natural sunlight for 50 landscape plants, promoting photosynthesis in plants. This process results in the daily production of 5,000 liters of oxygen, a daily reduction of 5,000 liters of carbon dioxide, and the removal of over a hundred harmful gases. This significantly improves and enhances the air quality within the hotel, transforming it into a completely carbon-neutral ecological balance system. The hotel not only sustains its oxygen needs but also produces a surplus, making it a truly self-sufficient oxygen-rich environment.

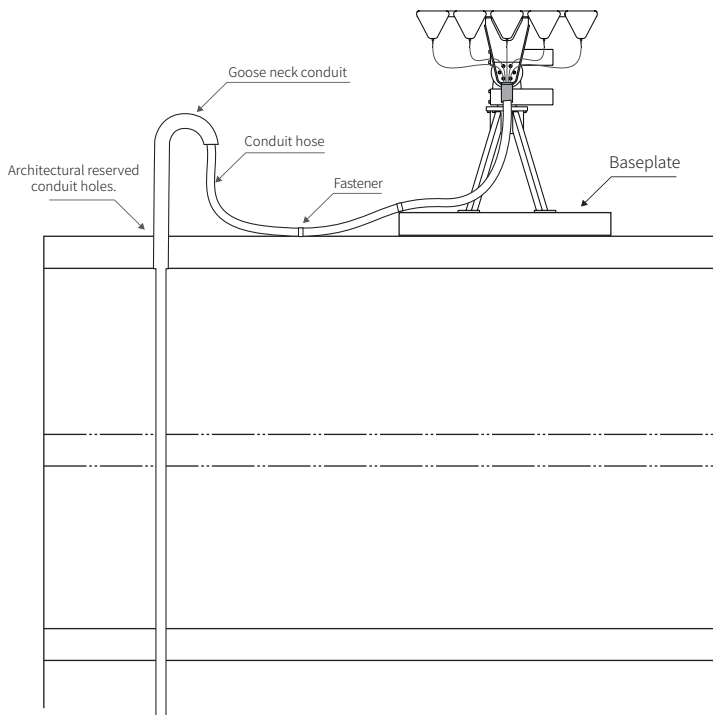
● Installation of the Parans Natural Sunlight System

1、 Installation of the Sunlight System

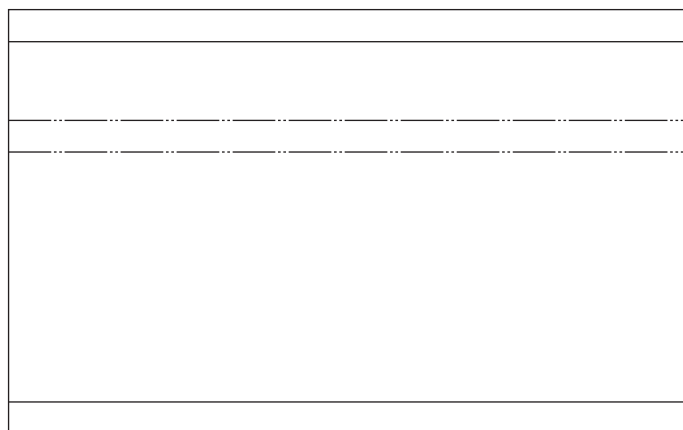
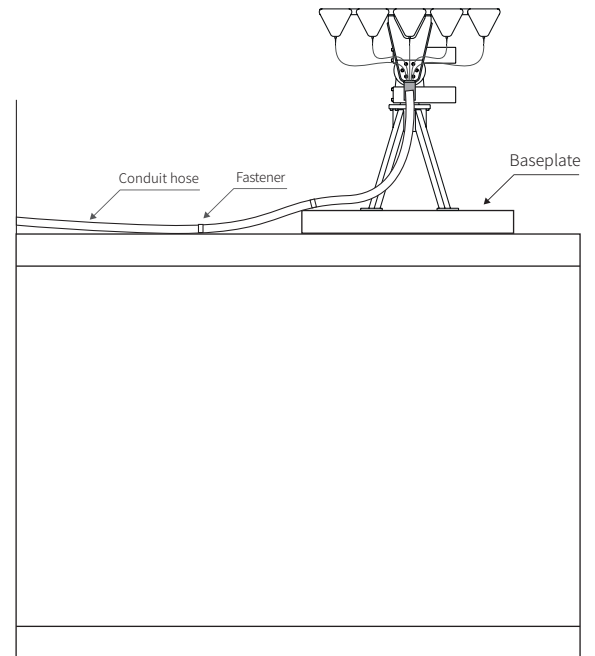


2、 Installation Method of SP4 Series Daylight Collector (Place in Play)

Method ①: Roof installation



Method ②: Install on the balcony



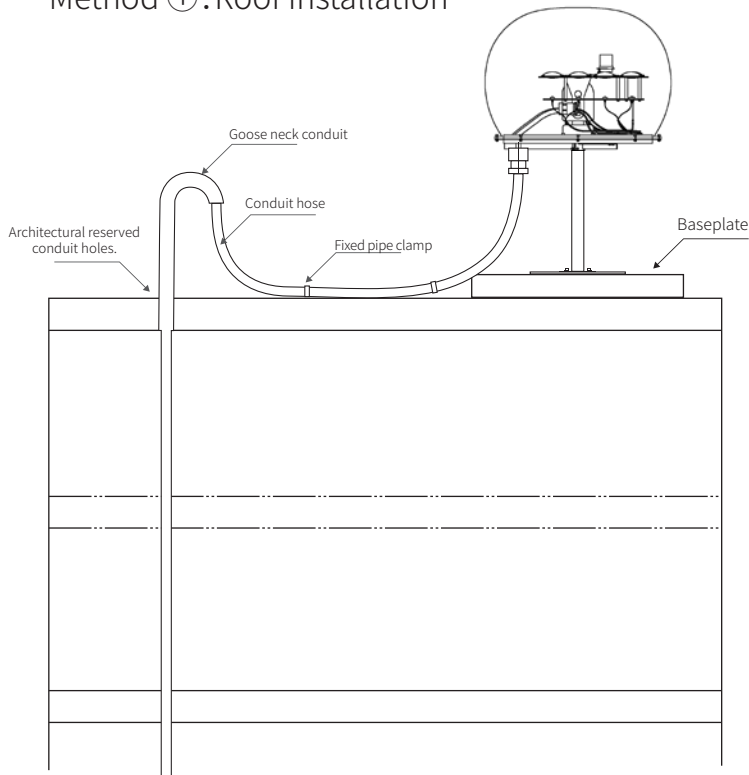
Method ③: Installation in the courtyard

Note:

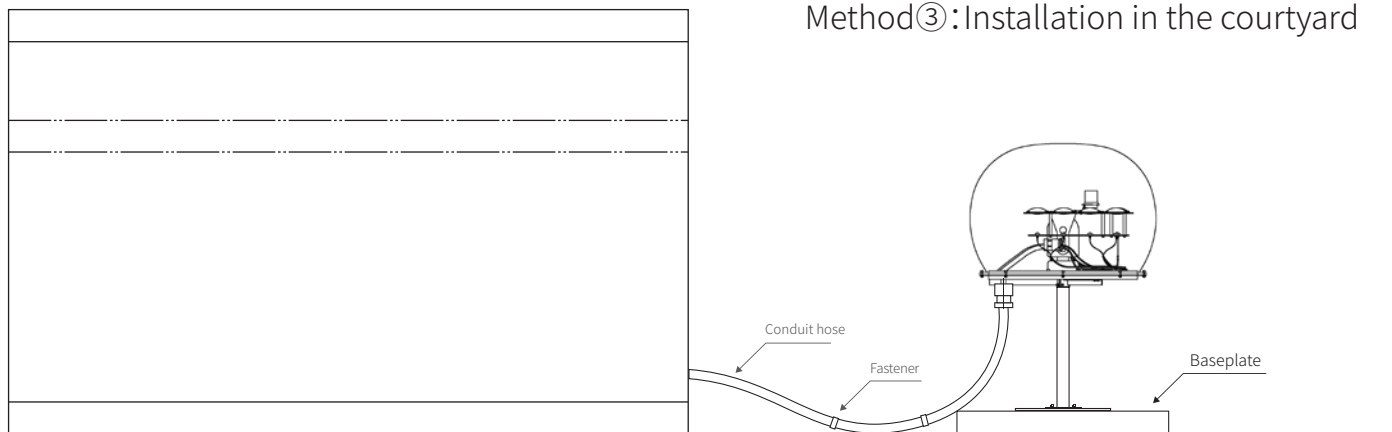
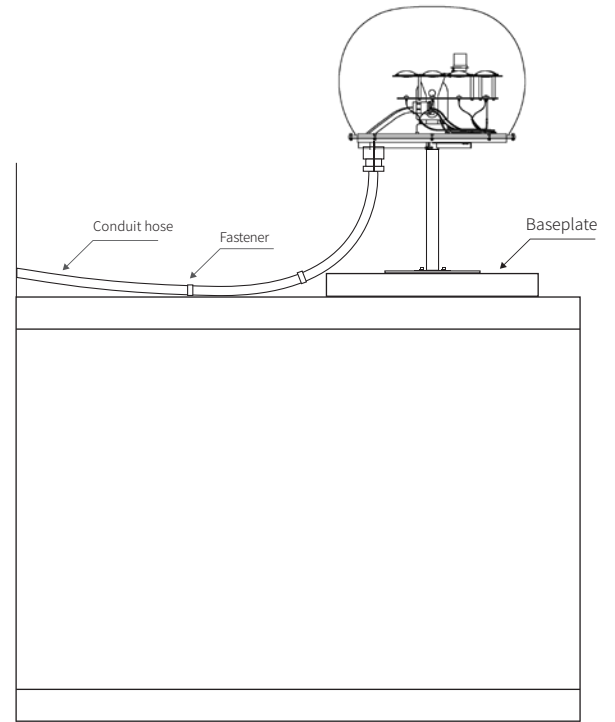
The SP4 series daylight collector has three installation methods, making it easy to plug and play. The first method is installing on the roof, the second is on the balcony, and the third is in the courtyard. To avoid damaging the roof and cope with harsh weather conditions, a transition base should be placed before installation, and the daylight collector should be fixed on it. The dimensions and thickness of the transition base should be adjusted based on actual conditions to ensure a secure and safe installation. Here is a simple diagram. Please refer to the installation instructions for detailed installation procedures.

3、 Installation Method of PLT5 Series Daylight Collector. (Place in Play)

Method ①: Roof installation



Method ②: Install on the balcony



Note:

The PLT5 series daylight collector has three installation methods, making it easy to plug and play. The first method is installing on the roof, the second is on the balcony, and the third is in the courtyard. To avoid damaging the roof and cope with harsh weather conditions, a transition base should be placed before installation, and the daylight collector should be fixed on it. The dimensions and thickness of the transition base should be adjusted based on actual conditions to ensure a secure and safe installation. Here is a simple diagram. Please refer to the installation instructions for detailed installation procedures.

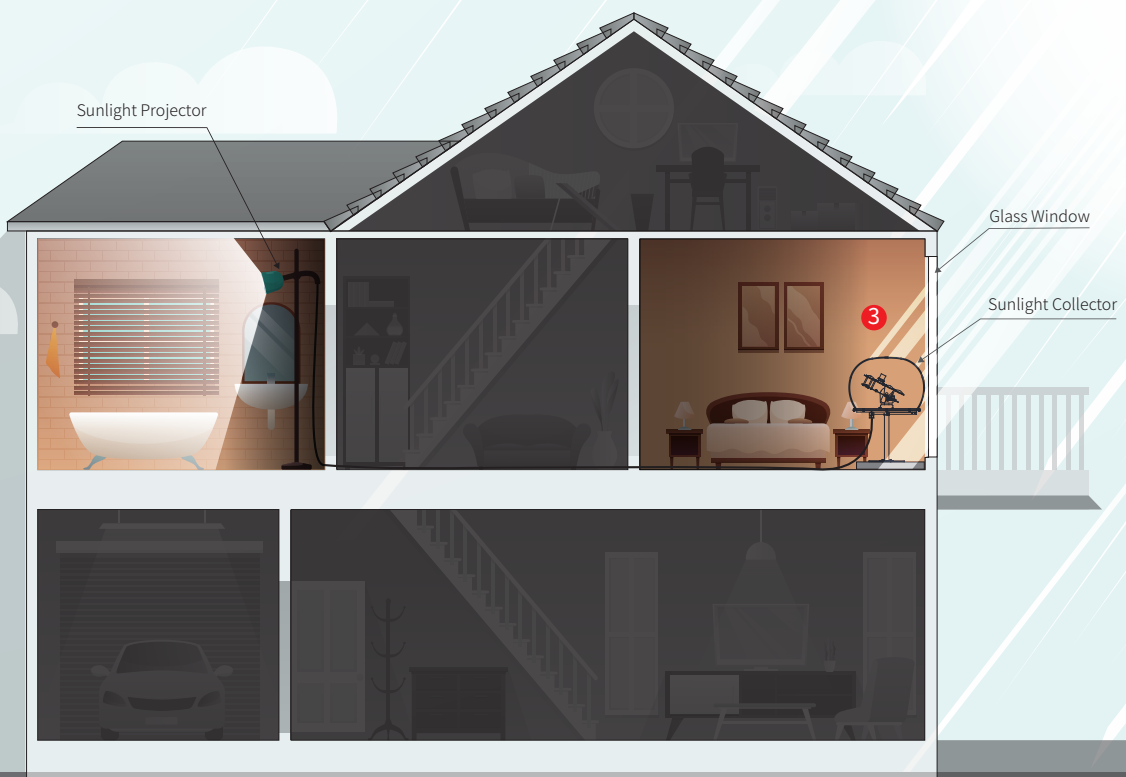
4、 PLT5 Sunlight System Installation Scenarios

SCENARIO ❶ : Sunlight collector and projector are both placed outdoors;

SCENARIO ❷ : Sunlight collector and projector are placed outdoor and indoor respectively.



SCENARIO ❸ : Sunlight collector and projector are both placed indoors.



Parans sunlight systems have been widely applied in various scenarios, including education, healthcare, elderly care, new energy, agriculture, commercial offices, residential areas, public buildings, underground facilities/garages, and more. To date, over 300 top-notch application cases have been successfully implemented globally.



Parans—LEADING SUNLIGHT





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