



## Cycle track lighting through multiple solar-powered lighting modules mounted on the associated post, processed in a sequence circuit or sequential wireless circuit.

The bike path should be illuminated by a solar-driven lighting module. Each solar controlled lighting module must be mounted on a pole.

Each pole is to be equipped with a lighting module, optical LED element and 2 - 3 – 4 integrated solar panels.

The solar panels are built in a way that they enjoy maximum protection against shock. For poles lower than SPB 400 , an additional "Lexan" protection is provided for the solar panels. The built-in solar panels are built so that they can be installed at all times to both the east and south.

The accompanying poles consist of aluminium and are to be 3.28ft, 6.56ft, 9.84ft, and 13.12ft high. The material thickness of the aluminium of the pole is at least 0.15 inches.

The planned distance between the posts should be 41ft to 49.21ft for 3.28ft poles and 49.21ft to 65.61ft for the 6.56ft and 9.84ft and 13.12ft posts.

The lighting modules mounted on matching pole are processed in a sequence circuit or sequential wireless circuit. Each lighting module should work autonomously. The lighting modules are to be full duplex wirelessly connected.

The lights should only start working when it gets dark (nightfall).

When a user comes on the bicycle path, the user will be detected by the system and some lighting modules will be activated in front and behind the user.

The number of lighting modules, which is activated before and behind when a user is located on the bike path, and when it is detected by an illumination module with built-in transmitter / receiver, must be adjusted in the software.

The switched-activation of the lighting module on the associated pole needs to go along with the user in the direction in which the user travels.

The software set pattern of activation of the lighting module will repeat itself until long after the user leaves the bike path. The software pre-set pattern is always activated when the user passes pole with associated lighting module passes where he is detected again.

When the new pattern comes in force, the old pattern has to be de-activated and this is in the software.



When there are multiple users on the move in both directions on the cycle path the software must maintain the set pattern, and to keep it operating in both directions.

The level of the lighting module is to be software adjustable from 0% to 100%.

The posts shall be equipped with an optical element which has one or more built-in power LEDs , the built-in LEDs have a lifetime of at least 50,000 hours.

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The LEDs used are of the type 3 x 3 watts, 130 lumens output per watt. The total power of the LEDs is 9 Watt (+/- 1170 lumens max). Emitted light nominally at 3 watts is +/- 390 lumens.

The optical element joins an elongate (cigar -shaped) illumination pattern when on the bike path and this in parallel with the bike path.

The emitted light is 450 lux at one meter at 6 ° 3 watt power setting.

On 3.28ft	450 lux , 6° Deg.
	318 lux , 15° Deg
	157 lux , 30° Deg

On 6.56ft	113 lux , 6° Deg
	80 lux , 15° Deg
	40 lux , 30° Deg

On 9.84ft	50 lux , 6° Deg
	35 lux , 15° Deg
	18 lux , 30° Deg

To maximize prevention of erroneous detection by other moving elements (leaf fall, grass, etc.) the user from the first lighting module are detected and only in the detection by subsequent illumination module the following lighting modules will be effectively activated.

The detection between the two poles must be done by means of a velocity measurement. The speed to be detected must be between 1.5 mph and 23 mph.

The speed detection may be adjusted with software.

The communication between the poles must be done wirelessly. The radio technology used must handle both point to point, and point-to-multipoint.

The maximum transmitter / receiver distance in clear view of 328ft.

The used frequency is 2.4Ghz.

When the posts are in one line, then communication is possible over the entire length.



It should be possible to be able to communicate with other SolarPath Solutions products, so this can be seen as a single system. Example. beware oncoming cyclist Billboards, or bordure floodlight Solar lights.

The lighting modules are equipped with a battery, of the type Lifepo4 – 3.2 Vdc 15.6 AH -2000 charge cycle. These are recharged during the day by solar panels built into the post.

The charger is MMPT software controlled and adjusted so that a maximum energy storage and maximum battery life is guaranteed. Or The lighting modules are equipped with an ecological energy storage unit. It has an expected life of at least 10 years and up to 1,000,000 (nominal age 15) once recharging. They work under extreme temperatures from -40 to + 65 ° C. These are recharged during the day by the solar panels built into the pole.

The charger is MPPT software controlled and adjusted so that a maximum energy storage and maximum battery life is guaranteed.

The installation of the light poles does not require special knowledge.

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## Technical info SOLARPATH SOLUTIONS patch Lighting

Average current consumption during nightfall operation	3.6 mA typical
Average current consumption during day time operation.	1 mA typical
Average current consumption by detection and led ON	1.5 Amp @ 2.5Vdc
Led power	9 Watt max.( set on 3 Watt)
LED lumen output	1180 lm @ +/-5000 kelvin
LED colour	White
other colours on request available.	R – G - B - WW
LED live time	60.000 hours
Light output	450 lux/3.2ft 6°
	113 lux /6.56ft 6°
	50 lux /9.84ft 6°
LED optic 3 types available	6° <u>typical</u>
	15°
	30°
Sensor type	PIR
Sensor range <u>standard</u> type	6.56ft
Sensor range enhanced type	328ft
Solar cells	Poly
Solar power « standard »	2 x 5.3 Watt (10.6)
Solar power « Pole 9.84ft type »	3 x 5.3 Watt (15.9)
Solar power « Pole 13.12ft type »	4 x 14 Watt (56)
Battery type	Lifepo4 15.6 Ah.
Battery voltage	3.2 Vdc
Battery capacity	15600 mA
Battery Charge cycle	2.000 times
<i>Optional</i>	
Super energy storage	up to 15 years life time
Voltage	2.8 Volt dc 10K FC
Charge Cycle	1.000.000 times
Temperature range	-40 - +65°C
Battery charger	MPPT type
Battery full charge time	8 hour/2000mA
Radio	Zigbee
Radio communication	full duplex
Radio spectrum	2.4 Ghz spread spectrum
Radio distance	328ft line of sight
Distance between each SolarPath light (recommend)	41ft
Switch ON/OFF time	7 seconds
Number of light switched on standard	2 before, 1 behind
The number of light can be programmed example.	3 before 1 behind
Number of light switching by full battery	+/-1500 detections
Power management control	+/-2500 detection
Number of poles than can be installed	Unlimited in line of sight.
Dimensions « standard »	0.32 in x 0.32 in x 3.28in
Dimensions « Pole type 9.84ft»	0.32 in x 0.32 in x 9.84in
Dimensions « Pole type 13.12ft»	0.32 in x 0.32 in x 13.12in

Other models and/or dimensions are also available by request.