

**odak<sup>®</sup> R&D  
CENTER**

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**smart city technologies**

**Tethered Lighting Drones**

Odak R&D Center is a technology company that develops value-added and sustainable technologies that make a difference in the fields of smart city technologies (Traffic, Energy, Lighting). Odak R&D Center aims to gather all sub-elements of smart city technologies under the roof of a unique platform by developing new generation hardware, software and subsystems.

Our aim is to develop products (hardware and software) and systems that meet the criteria of medium and high technology in our own fields of activity; To be a company that has brand recognition among the companies specialized in its field in our country and in the world and has signed major projects.

Odak R&D Center contributes to the standard, technical method and software activities developed in our country in the field of traffic. Our engineers receive Ertico Intelligent Transportation Systems (ITS&C-ITS and MaaS) trainings and certificates and develop products/systems with this vision in their applications. At the same time, it also follows IoT-based applications and technologies, which are among the most important parts of smart cities. For this purpose, it is also a member of LoRa Alliance. Translated with DeepL.com (free version)

In addition to Smart City Technologies, we also carry out special projects for the defense industry, aviation and medical sectors. As Odak R&D Center, in order to promote our work in the field of defense industry and to increase our awareness of the sector, Aselsan has become a member of Gücümüz Bir and a member of Defense Industry YETEN.

Odak R&D Center employees participate in leading competitions in the field of lighting and use leading analysis programs in this field. It can also develop KNX and DALI automation, the leading building automation standard in lighting automation, and also realizes lighting change/transformation projects using Dialux/Relux within the scope of EN12464 standards. It continues its regional and global activities in the field of lighting as a member of AGID (Association of Lighting Equipment Manufacturers).

Odak R&D Center engineering team prepares your lighting change/transformation projects in your factories and facilities in the computer environment in the closest way to reality (over 95% accuracy), accelerates your decision-making processes with engineering studies together with investment return analysis and performs the studies you need for a correct investment.

## MEMBERSHIPS & AWARDS & ACHIEVEMENTS

- LED Lighting Project Competition First Prize
- DIALux evo Featured Project Winner
- Acamedy Ertico Akıllı Ulaşım Sistemleri Sertifikası (ITS&C-ITS)
- Academy Ertico Akıllı Ulaşım Sistemleri Sertifikası (MaaS), 2022





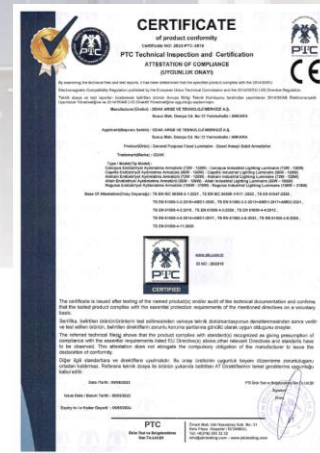
# Quality Certificates



# Patent and Trademark Registration Documents



# Product Certificates



# Membership Documents





[www.odakarge.com](http://www.odakarge.com)

## UAVs with Tethered Lighting Function

Cabled UAVs are rotary wing aircraft that are physically connected to a power station on the ground. The power station on the ground converts the mains voltage into high voltage direct current, enabling the UAV to be energized with a cable with the load it will carry. It has a DC-DC converter for high-power LED lighting and other electronic systems operating on the UAV.

Since they are connected to a power station, cabled UAVs can stay in the air for much longer than normal UAVs without any interruption. Thanks to this capability, it provides uninterrupted lighting until sunrise at altitudes ranging from 18 meters to 50 meters depending on the model. It provides one-handed control and management with its specially designed remote control without the need for a professional UAV pilot.

Wired UAVs are designed for use in search and rescue activities, construction, fire and fire response, road traffic accidents or road construction, or first aid response and fixed missions.

The system consists of Quadcopter Drone Platform, high power LED Lighting Module and/or camera, wired power system for uninterrupted power and command and control controller to provide wide area surveillance and high illumination. The payload capacity of the aircraft consists of the LED lighting module. There is no additional payload attachment and capacity.





The G3L, an economical model designed for large area surveillance and lighting, stands out with its compact design. It is designed to solve emergency lighting needs with its 1kW power unit and 450W LED lighting module. With a generator or portable power stations, you can fly uninterruptedly at any point where you provide mains voltage. In case of emergency or power failure, the battery in the power unit ensures the safe landing of the UAV.

The UAV, named G3L, can reach an altitude of up to 18 meters. It can be flown with the control connected to the power unit. It provides one-handed control and management with its specially designed remote control without the need for a professional UAV pilot. When the power is cut off, energy can be provided from the battery for 5 minutes and thanks to this feature, the cable can be collected by automatic winding. In the absence of 220V AC mains voltage, it automatically shuts down at the end of the fifth minute. The power unit has IP20 protection class and should be stored in a place with air flow like generators. The location of the power unit should be an awning or sheltered area that is not affected by rain, water or snow.



## Aircraft Specifications

Product Name	:G3L
Flight Altitude (m)	:18m
Automatic Takeoff	:No
Automatic Landing	:Yes
Emergency Landing Mode	:Yes, Automatic
Take-off Weight (kg)	:920 gr
Dimension (mm)	:L296 x W296 x H106
Wind - Rain Class	:Class6 (10,8~13,8m/sn) - Class10 (10L/sn)
Maximum Working Height (Altitude)	:4500 m
Operation Possibility	
Operating Temperature (°C)	:-20°C - +50°C



## Lighting LED Module Features

Lighting Unit Power (W)	:450W
Lighting Source	:Power LED
Color Temperature(CCT)	:6500K
Color Rendering Index	:>70
Lighting Area	:>2000m2



## Control Controller Features

Contact Type / Cable Length	:Wired / 1 meter
Flight Control	:Yes
Satellite Number Control	:Yes
Lighting On/Off	:Yes
Engine On / Off	:Yes

## Power Unit Specifications

Input Voltage (AC)	:220-240V, AC 50/60 Hz
Max. Power (W)	:1100W
Assembly Time / Workspace	:5dk / 5m <sup>2</sup>
Reel Winding - Release	:Yes, Automatic
Cable Length	:18m
Weight (gr)	:15270
Dimension (mm)	:L445 x W425 x H186

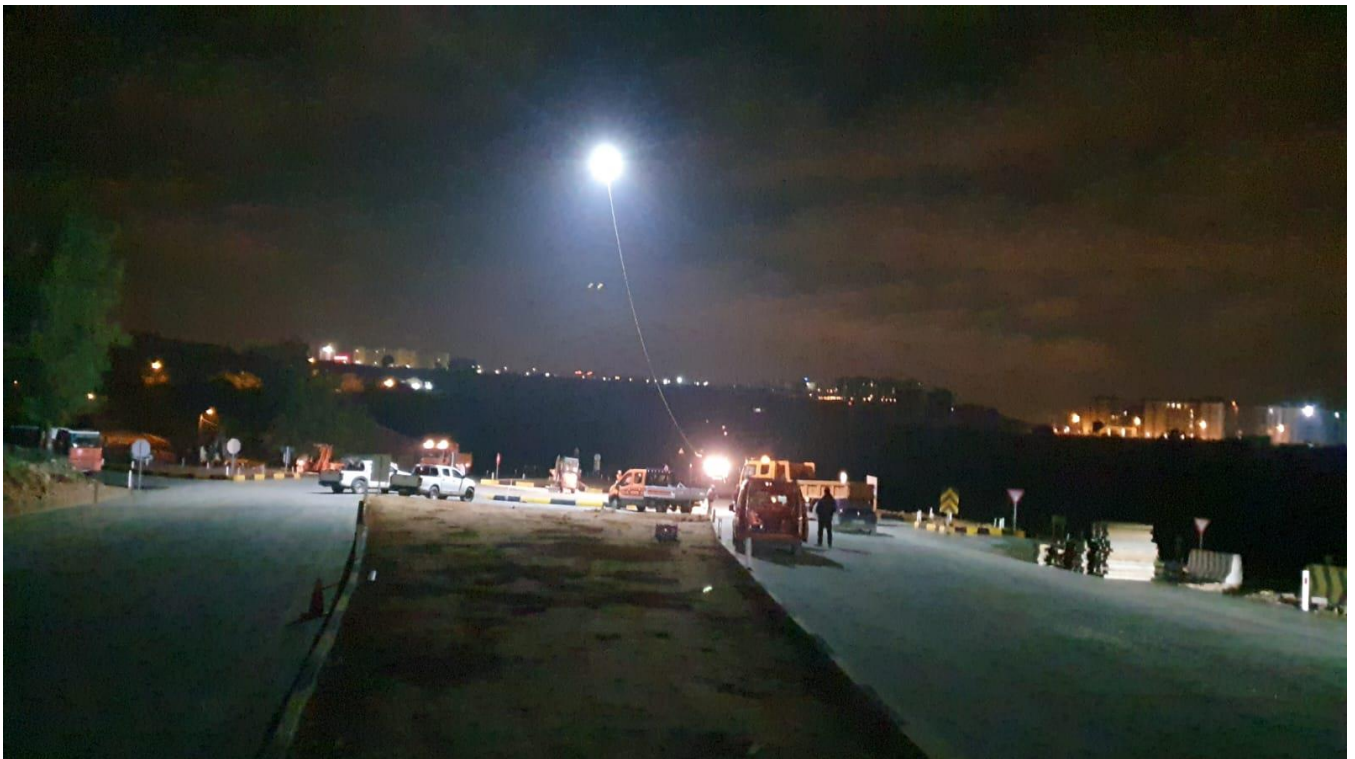


## Product Order Information

Product Code	Power	Input Voltage	CCT/CRI	Departure Weight	Flight Duration	Dimensions	Cable Length
G3L-04-RW-24-TET-18	450W	220 VAC 50-60 Hz	6500K / 70 CRI	920gr	24s	L60 x W52 x H32 cm	18 m

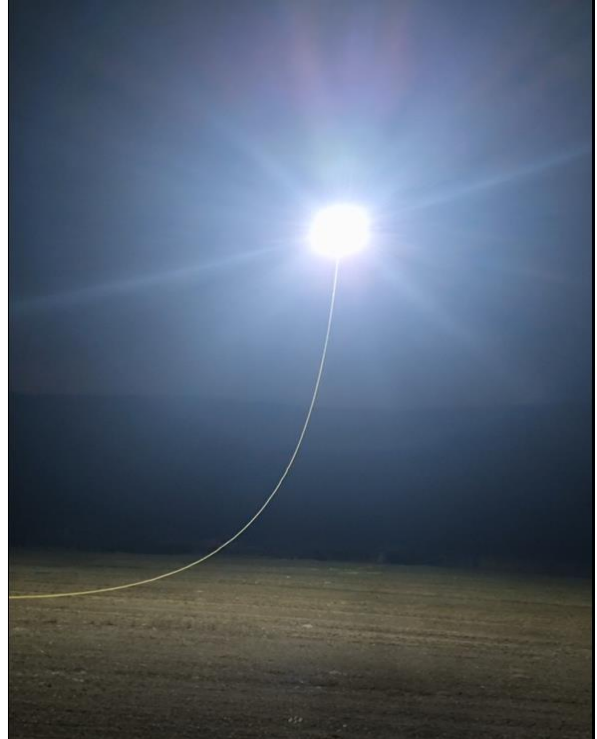
- Product average maximum power is 1.1 kW. Generator or generator at points without mains voltage you can use a portable power station.
- 1200W Lithium Battery portable power station with at least 1 hour of use.
- You can also use it without interruption with a gasoline generator with a continuous power of at least 1.2kW. We recommend a generator due to price/performance and long-term use.

## Application Visuals





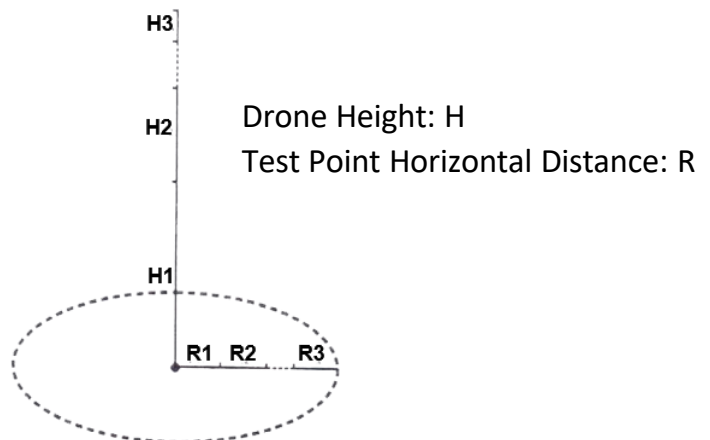
## Lighting Test



In the illumination test performed by taking our wired illuminated aircraft to an altitude of 10m (AGL), 147lux was obtained on the ground, 68 lux at an altitude of 15m (AGL) and 41lux was obtained in the illumination measurement made while flying at an altitude of 20m (AGL). The visuals of the results of the measurements made with the Luxmeter at 10m, 15m and 20m are as follows.

## Lighting Test Results

Height Distance	10meter	15meter	20meter
R0=0	147lux	68lux	41lux
R1=10 metre	50lux	32lux	27lux
R2=15 metre	17lux	14.8lux	15lux
R3=20 metre	7.8lux	6lux	7.5lux
R5=25 metre	2.9lux	3.3lux	3.8lux





UAVs with lighting functions are widely used in industry. It is planned to be used 24/7 uninterruptedly in various fields from the military sector to security forces and even search and rescue activities.

Gendarmerie traffic wants to carry the wreckage of a vehicle that has rolled into a ravine on the back of an all-terrain vehicle for search and rescue activities, while for determining the condition of a derailed train/wagon; the railway maintenance team wants the device to be carried on the back. Police search and rescue teams also want the option to carry the device on the back for vehicles or people who fall into the sea, rivers or ponds. Based on such needs, the G3L model has been modified and transformed into the G5L model, which is a design that can be carried on the back and will not be affected by rain, and put on the market. Just like the G3L, it has a 1kW power unit and 450W LED lighting module.

The UAV, named G5L, can reach an altitude of up to 28 meters. It can be flown with the control connected to the power unit. It provides one-handed control and management with its specially designed remote control without the need for a professional UAV pilot. When the power is cut off, energy can be provided from the battery for 5 minutes and thanks to this feature, the cable can be collected by automatic winding. In the absence of 220V AC mains voltage, it automatically shuts down at the end of the fifth minute. The power unit should be stored in a place with air flow like generators.

# G5L Tethered Lighting UAV

## Aircraft Specifications

Product Name	:G5L
Flight Altitude (m)	:28m
Automatic Takeoff	:No
Automatic Landing	:Yes
Emergency Landing Mode	:Yes, Automatic
Take-off Weight (kg)	:920 gr
Dimension (mm)	:L296 x W296 x H106
Wind - Rain Class	:Class6 (10,8~13,8m/sn) - Class10 (10L/sn)
Maximum Working Height (Altitude)	:4500 m
Operation Possibility	
Operating Temperature (°C)	:-20°C - +50°C



## Lighting LED Module Features

Lighting Unit Power (W)	:450W
Lighting Source	:Power LED
Color Temperature(CCT)	:6500K
Color Rendering Index	:>70
Lighting Area	:>3000m2

## Control Controller Features

Contact Type / Cable Length	:Wired / 1 meter
Flight Control	:Yes
Satellite Number Control	:Yes
Lighting On/Off	:Yes
Engine On / Off	:Yes

## Power Unit Specifications

Input Voltage (AC)	:220-240V, AC 50/60 Hz
Max. Power (W)	:1100W
Assembly Time / Workspace	:5dk / 5m <sup>2</sup>
Reel Winding - Release	:Yes, Automatic
Cable Length	:28m
Weight (gr)	:16000
Dimension (mm)	: 435*265*510



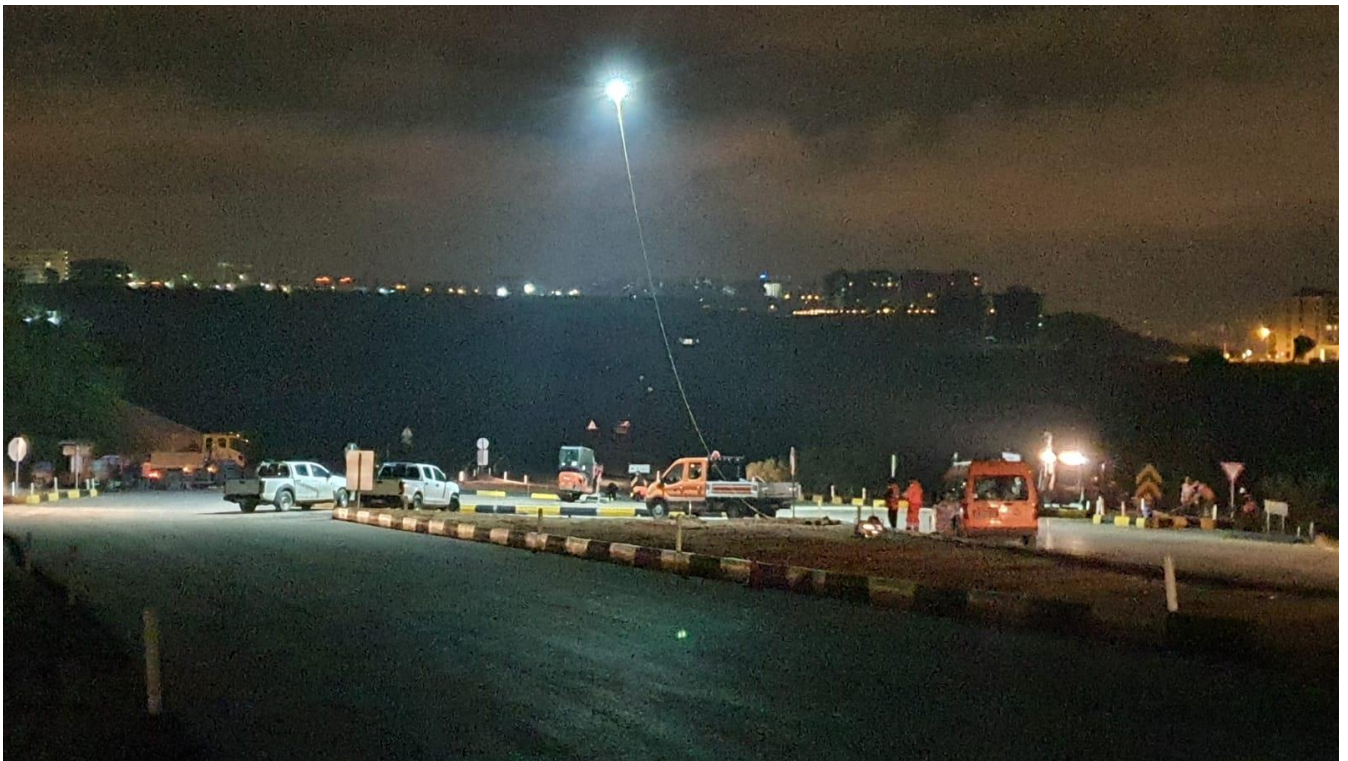
## Product Order Information

Product Code	Power	Input Voltage	CCT/CRI	Departure Weight	Flight Duration	Dimensions	Cable Length
G5L-04-RW-24-TET-28	450W	220 VAC 50-60 Hz	6500K / 70 CRI	920gr	24s	L60 x W52 x H32 cm	28 m

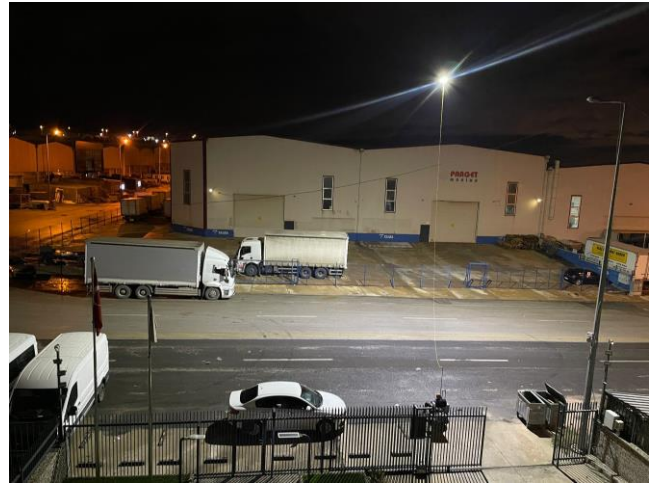
- Product average maximum power is 1.1 kW. You can use a generator or portable power station where there is no mains voltage.
- You can use the product for at least 1 hour with a 1200W Lithium Battery portable power station.
- You can also use it without interruption with a gasoline generator with a continuous power of at least 1.2kW. We recommend a generator due to price/performance and long-term use.



## Application Visuals



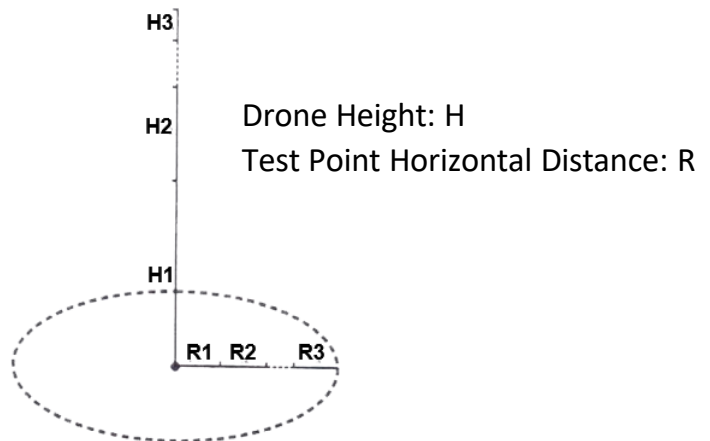
## Lighting Test



In the illumination test performed by taking our wired illuminated aircraft to an altitude of 10m (AGL), 147lux was obtained on the ground, 68 lux at an altitude of 15m (AGL) and 41lux was obtained in the illumination measurement made while flying at an altitude of 20m (AGL). The visuals of the results of the measurements made with the Luxmeter at 10m, 15m and 20m are as follows.

## Lighting Test Results

Height Distance	10meter	15meter	20meter
R0=0	147lux	68lux	41lux
R1=10 metre	50lux	32lux	27lux
R2=15 metre	17lux	14.8lux	15lux
R3=20 metre	7.8lux	6lux	7.5lux
R5=25 metre	2.9lux	3.3lux	3.8lux







UAVs with lighting functions are widely used in industry. They are planned to be used 24/7 in various fields from the military sector to security forces and even search and rescue activities. In response to requests for illumination of larger areas and higher altitude, the G6LS model was developed based on the G5L model. With the G6LS model, you can fly smoothly and uninterruptedly at altitudes ranging from 5 meters to 50 meters. The maximum flight altitude is 50 meters due to the power cable.

The G6LS model has RTK technology that provides precise positioning capability. With this technology, positioning with centimeter precision can be provided. The G6LS model can respond to requests to work at an altitude/altitude of 4500 meters. Thanks to its 720W lighting capability, wide area scanning can be done more easily. Of the four 180W lighting modules under the drone, 2 of them can be directed to the desired area via the remote control.

It provides one-handed control and management with its specially designed remote control without the need for a professional UAV pilot. You can fly uninterruptedly at any point where you provide mains voltage. In case of emergency or power failure, the battery in the power unit will automatically ensure the safe landing of the UAV.



# G6LS Tethered Lighting UAV

## Aircraft Specifications

Product Name	:G6LS
Centimeter Precise Positioning	:RTK Technology
Flight Altitude (m)	:50 m
Automatic Takeoff	:No
Automatic Landing	:Yes
Emergency Landing Mode	:Yes, Automatic
Take-off Weight (gr)	:1430 gr
Dimension (mm)	:296*296*203
Wind - Rain Class	:Class7 (13,9~17,1m/sn) - Class10 (10L/sn)
Maximum Working Height (Altitude) Operation Possibility	:4500 m
Operating Temperature (°C)	:-20°C - +50°C



## Lighting LED Module Features

Lighting Unit Power (W)	:720W
Lighting Source	:Power LED
Color Temperature(CCT)	:6500K
Color Rendering Index	:>70
Lighting Area	:>6000m2

## Control Controller Features

Control Communication Frequency (GHz)	:2.4 Ghz
Remote Control Communication Distance	:<500 m
Number of Channels	:32

## Power Unit Specifications

Input Voltage (AC)	:220-240V, AC 50/60 Hz
Max. Power (W)	:1250 W
Assembly Time / Workspace	:5dk / 5m <sup>2</sup>
Reel Winding - Release	:Yes, Automatic - Manual
Weight (kg)	:27 kg
Size (cm)	:760*540*400



## Product Order Information

Product Code	Power	Input Voltage	CCT/CRI	Departure Weight	Flight Duration	Dimensions	Cable Length
G6LS-04-RW-32-TET-50	720W	220 VAC 50-60 Hz	6500K / 70 CRI	1430 gr	24s	L65x W30 x H42 cm	50 m

- Product average maximum power is 1.25 kW. You can use a generator or portable power station where there is no mains voltage.
- You can use the product for at least 1 hour with a 1250W Lithium Battery portable power station
- You can also use it without interruption with a gasoline generator with a continuous power of at least 1.25kW. We recommend a generator due to price/performance and long-term use.



When UAVs come to mind, there is also a demand to take videos/photos with the camera. Based on these demands, G6LVS, the most professional UAV with lighting function, was born. With the G6LVS model, you can shoot 4KHD video at 30 frames per second day or night. You can connect your smartphone to the UAV with an application you download on the professional drone controller and view the videos taken through its camera. In addition, the videos taken on the drone are recorded on the Micro SD card (256GB).

The G6LVS model also features RTK technology that provides precise positioning capability. With this technology, positioning with centimeter precision can be provided. The G6LVS model can also respond to requests to operate at an altitude/altitude of 4500 meters. With its 1.25kW power unit, 540W LED lighting module and 4K HD camera, it is designed according to the demands of search and rescue teams.

Thanks to its 540W lighting capability, wide area scanning can be done more easily. Of the four 180W lighting modules under the drone, 2 of them can be directed to the desired area via the remote control. With G6LVS, you can safely apply at heights ranging from 5 meters to 50 meters. The maximum flight height is 50 meters due to the power cable.

You can fly uninterruptedly at any point where you provide mains voltage. In case of emergency or power failure, the battery in the power unit will automatically ensure the safe landing of the UAV.

# G6LVS Tethered Lighting UAV

## Aircraft Specifications

Product Name	:G6LVS
Centimeter Precise Positioning	:RTK Technology
Flight Altitude (m)	:50m
Automatic Takeoff	:No
Automatic Landing	:Yes
Emergency Landing Mode	:Yes, Automatic
Take-off Weight (kg)	:1430 gr
Dimension (mm)	:296*296*203
Wind - Rain Class	:Class7 (13,9~17,1m/sn) - Class10 (10L/sn)
Maximum Working Height (Altitude)	:4500 m
Operation Possibility	
Operating Temperature (°C)	:-20°C - +50°C



## Lighting LED Module Features

Lighting Unit Power (W)	:540W
Lighting Source	:Power LED
Color Temperature(CCT)	:6500K
Color Rendering Index	:>70
Lighting Area	:>5000m2

## Camera Module Specifications

Lens	:170° Wide Angle
Video Resolution	:4K HD Video 1080p, 30FPS
Video Format / Video Recording	:MP4 - H265 / SD Kart(256GB)
PTZ Controlled Rotation Range	:pan +/- 90°, tilt +/- 30°
Vibration Damper	:Yes
Gimbal	:3 Axis

## Control Controller Features

Control Communication Frequency (GHz)	:2.4 Ghz
Remote Control Communication Distance	:<500 m
Number of Channels	:32

## Power Unit Specifications

Input Voltage (AC)	:220-240V, AC 50/60 Hz
Max. Power (W)	:1250 W
Assembly Time / Workspace	:5dk / 5m²
Reel Winding - Release	:Var, Automatic - Manual
Weight (gr)	:17440
Size (cm)	:L45 x W41 x H22 cm



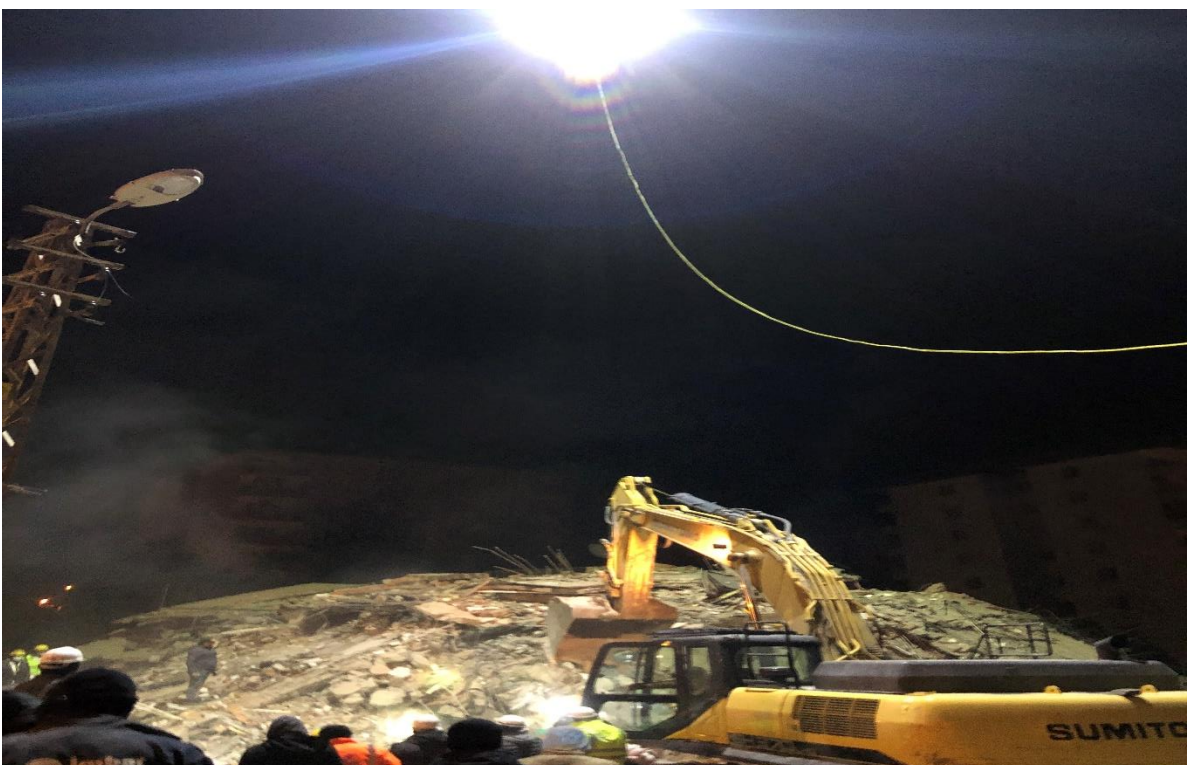
## Product Order Information

Product Code	Power	Input Voltage	CCT/CRI	Departure Weight	Flight Duration	Dimensions	Cable Length
G6LVS-04-RW-32-TET-50-CAM	540W	220 VAC 50-60 Hz	6500K / 70 CRI	1430 gr	24s	L65x W30 x H42 cm	50 m

- Product average maximum power is 1.25 kW. You can use a generator or portable power station where there is no mains voltage.
- You can use the product for at least 1 hour with a 1250W Lithium Battery portable power station
- You can also use it without interruption with a gasoline generator with a continuous power of at least 1.25kW. We recommend a generator due to price/performance and long-term use.



## Application Visuals



## Lighting Test



In the illumination test performed by taking our wired illuminated aircraft to an altitude of 5m (AGL), 687lux was obtained on the ground, 230lux was obtained at an altitude of 10m (AGL) and 80lux was obtained in the illumination measurement made while flying at an altitude of 15m (AGL). The visuals of the results of the measurements made with the Luxmeter at 5m, 10m and 15m are as follows.

## Lighting Test Results



5m- 687lx

10m- 230lx



15m- 80lx



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