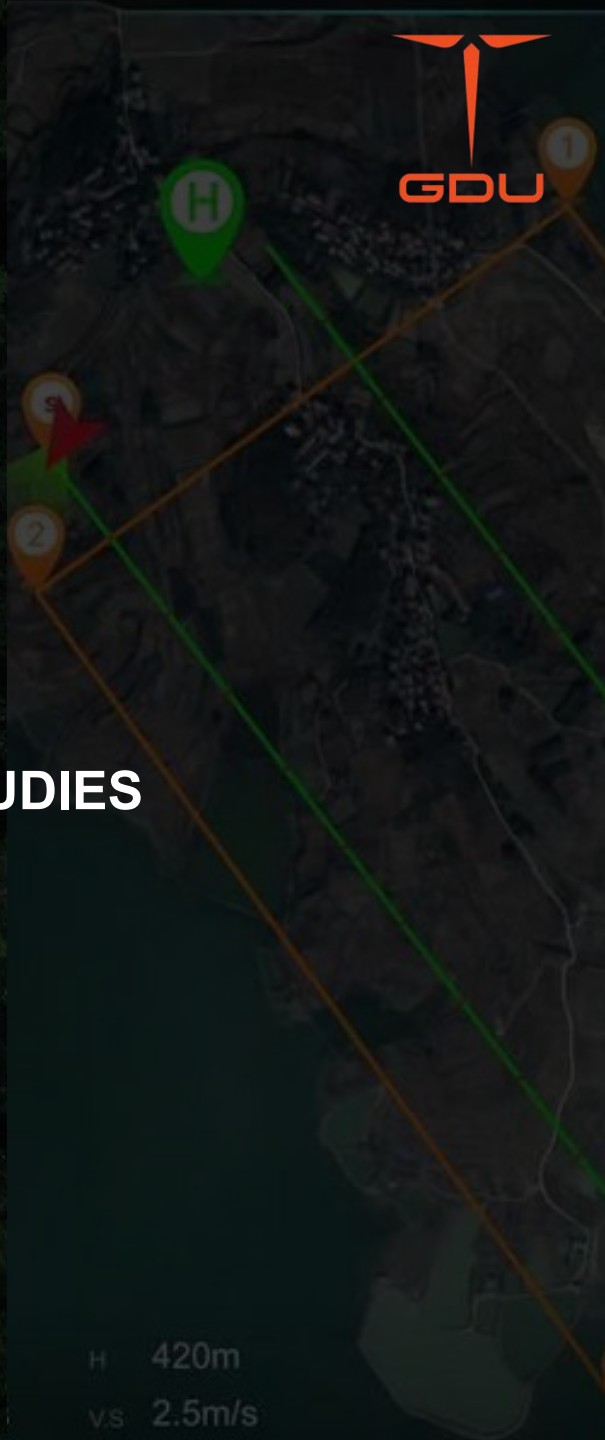
GDU | SAGA

In Flight, Day and Night

-SOLAR-

CONTENT



-CORE TECHNOLOGY-

Single Chip Integration Technology

Intelligent Control Technology

Military Frequency-hopping Anti-interference Technology

Fully Independent R&D of Infrared Technology

01 ABOUT SAGA

Foldable Portability

Intelligent Control

Obstacle Avoidance

Compatible Universal Payload

7KM HD Video Transmission

Open SDK

Max Take-off Weight

Vision Positioning System

Description	Parameters
Model	GDU SAGA
Dimensions (Unfolded)	745mm×555mm×225mm
Dimensions (Folded)	273mm×224mm×107mm
Maximum Take-off Weight	3.4kg
Maximum Load	1kg
Maximum Horizontal Flight Speed	15m/s (Sport Mode)
Maximum Flight Altitude	3500m
Maximum Tolerable Wind Speed	10m/s
Maximum Flight Time	35 minutes
Satellite Positioning Module	GPS/GLONASS Dual Mode
Hover Accuracy (P-GPS)	Vertical：±0.5m (Downward Vision System：±0.1m) Horizontal：±1.5m (Downward Vision System：±0.3m)
Video Transmission and Flight Control Distance	7KM

PAYLOADS

800X600
Infrared Camera

Floodlight with
Camera

Gas Detector with
Camera

Megaphone with
Camera

4K HD Camera
(Optional)

10X Optical
Zoom
Camera(Optional)

30X Optical
Zoom
Camera(Optional)

800X600 Infrared Camera (GTIR800)

Features

1. 800X600@50Hz infrared dual light
2. NETD 30mk or less
3. High precision temperature measurement
4. Multiple lens adaptation
5. Visible light/ infrared video switching

Floodlight with Camera (GISL01)

Features

1. Effective range 500m; Maximum brightness 3000lm

2. Photo resolution: 1920*1080;

3. Video resolution: 1920*1080

4. Operating temperature: -20℃～ 50℃; Storage temperature: -40℃～ 60℃

4. Operating humidity: 15% -90％ RH (no condensation)

Gas Detector with Camera (GIGD01)

Features

1. Type Detection Range

NO2 (0-20) ppm, 0.1ppm; CO (0-1000)ppm, 1ppm

SO2 (0-20) ppm, 0.1ppm; O3 (0-20) ppm, 0.1ppm

H2S (0-100)ppm, 1ppm; CH4 0-100%LEL, 1% (Optional)

PM2.5 ≥2.5μ m, 0-1000ug/m3, ±15% (Optional)

2. Relative Humidity 0～100%RH, ±3%RH

3. Temperature Measurement Accuracy -40~125℃, ±0.3℃

4. Photo&Video resolution: 1920*1080

Megaphone with Camera (GISPK01)

Features

1. Effective range 300m;
2. Sound range 55-60 decibels 100 meters away, 120 decibels maximum.
3. Sound transfer range 5km
4. Photo&Video resolution: 1920*1080
5. Sound notifications Police, Fire, Car horn, Real time voice intercom

4K HD Camera (QYT003) (Optional)

Features

1: 12.4 million effective pixels;

2: Equivalent focal length 24mm;

3: 4K@30fp HD video, 12 million pixels HD photo;

4: 3-axis stabilization, image stabilization precision ≤ 0.03 °;

5: Optional wiring box, supporting SBUS, PWM, serial port control interface.

10X Optical Zoom Camera (GTZMHD-10X) (Optional)

Features

1: 10x optical zoom, 4x digital zoom, zoom range 4.7-47mm;

2: 12.4 million effective pixels SONY CMOS;

3: 4K@30fps HD video, 12 million pixels HD photo;

4: Fully automatic focusing, supporting fine tune focus;

5: 3-axis stabilization, image stabilization precision ≤ 0.01 °;

6: Optional wiring box, supporting SBUS, PWM, serial port control interface.

30X Optical Zoom Camera (GTZMHD-30X) (Optional)

Features

1: 30X optical zoom, 4X digital zoom, zoom range of 6~180mm;

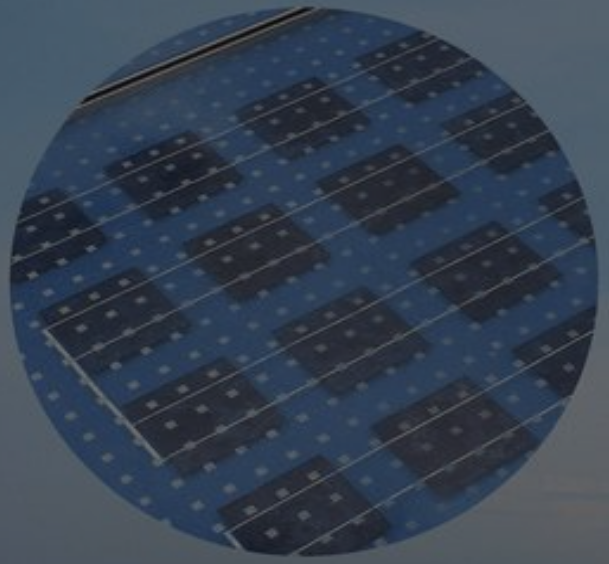
2: 12.4 million effective pixels SONY CMOS;

3: 4K@30fps HD video, 12 million pixels HD photo;

4: Fully automatic focusing, supporting fine tune focus;

5: 3-axis stabilization, image stabilization precision ≤0.01 °;

6: Optional wiring box, supporting SBUS, PWM, serial port control interface.



02 SAGA SOLAR APPLICATIONS

SAGA Advantages

Low costs

Planned route patrol can be set up for simple and quick operation;

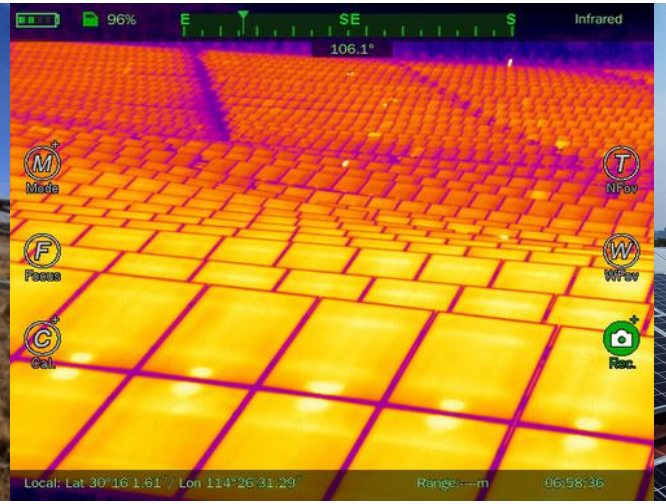
Save time and improve efficiency;

Protect the safety of patrol personnel and reduce risks.

SAGA not only manages the design, operation, maintenance, post-evaluation, emergency processes for the power station, but also carries out the monitoring and maintenance of solar panels. It can save time and energy unlike manual inspection, provides aerial mapping quickly, conducts image temperature recognition accurately, gives timely information feedback, and will improve work efficiency.

Solar power station inspection

Solar panel inspection



Solar panel temperature identification

Inspect solar panel hot spots

SAGA Solar Power Applications

Daily Solar Panel Inspection

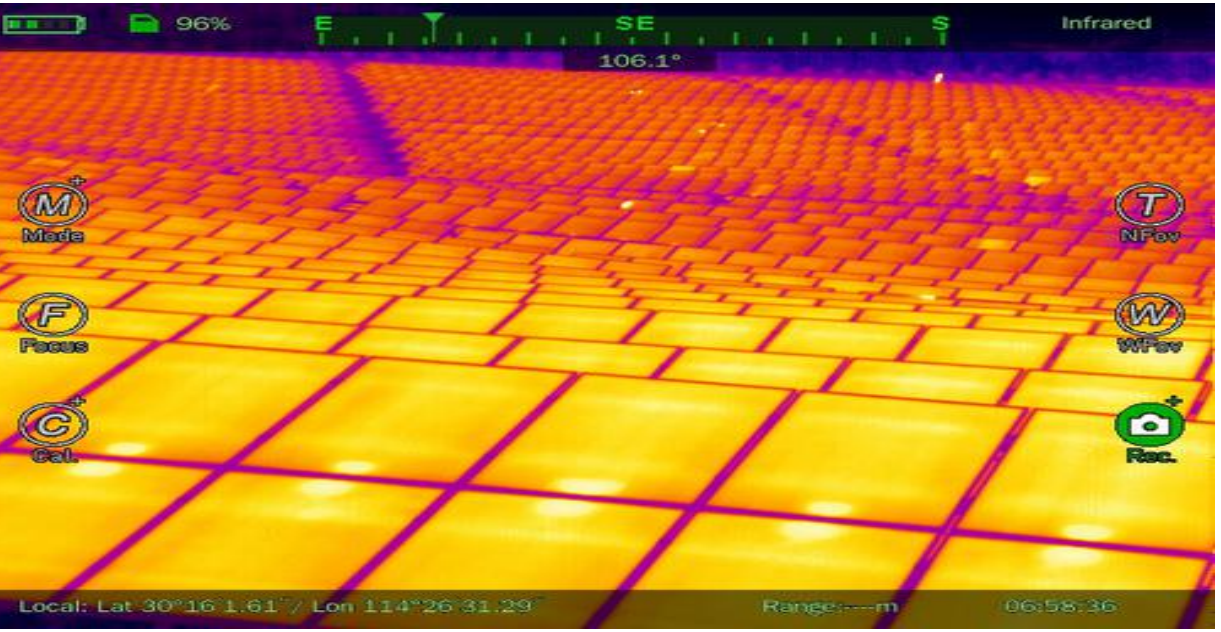
SAGA can be equipped with an HD camera, zoom cameras, infrared thermal camera, radar monitor, laser scanner or other equipment to monitor solar panels. It can conduct aerial inspections as well as comprehensively and intuitively scan for solar panel temperature abnormalities.

SAGA Solar Power Applications

Detailed Inspection

A high powered zoom camera mounted on SAGA can aid in the emergency repair of solar panels and the surrounding equipment. Synchronization and real-time monitoring can be used to evaluate the location and extent of the damage, inspect the fine details, and create a maintenance plan.

SAGA Solar Power Applications



Infrared Inspection

SAGA is capable of carrying an 800 * 600 high resolution infrared thermal camera that can accurately meausre and analyze the temperature of infrared thermal images to quickly identify abnormal hot spots and damage among tens of thousands of solar panels. The ultra high resolution can clearly show the details of each solar panel, identify all hidden dangers to the greatest extent, and take preventive measures for the future problems.

SAGA Solar Power Applications

Real-time Monitoring

SAGA can be equipped with an infrared dual-light camera for day and night monitoring, real-time monitoring of the target area during long missions, and fixed-point hovering for accurate monitoring and temperature identification over a designated target. After the video tracking module is installed, the designated target on the ground can be locked for stable and detailed monitoring, so as to find out whether solar panels have hot spots, are mismatched, as well as broken or damaged.

SAGA Solar Power Applications

Master All Aspects of Construction

In the early stages of construction, SAGA is used to understand the terrain, roads, and the surrounding environment to facilitate personnel and equipment entering a site and carry out their tasks quickly. In this way, personnel can use their materials, equipment and the positioning of solar panel to carry out construction according to the design requirements.

03 CASE STUDIES

Case Study: Guangdong Solar Power Station

Background：The solar power station is responsible for the power output of a large number of users in Guangdong province. In 2017, Guangdong's regional solar power production totaled 8.99 trillion RMB, accounting for 10.5 percent of the country's total power output ranking first in the country for 29 consecutive years. Due to its large area and complex environment, the inspection process must be done well.

Necessity：The shortage of UAVs to replace manual operations, especially for the inspection of complex areas and in severe weather at any time of the day, is an issue that must be quickly addressed. With inaccuracy, equipment weight, and safety risks for personnel to worry about, SAGA can effectively improve the efficiency of solar power inspections, reducing potential hazards as well as provide more accurate data and analysis.

SAGA

4K HD

800X600 Infrared

30X

Equipment : The GDU SAGA

Payloads : 4K HD camera，Infrared camera，30X optical zoom camera

Content : Solar panel inspection, illegal construction investigation, infrared detection

SAGA is not limited by the environment, can take off and land at any time, can collect data at a rapid speed, and can conduct monitoring. Monitoring and patrol inspections are carried out on targets on the ground or in the air. At the same time, by pairing SAGA with an intelligent payload, it can quickly identify temperature anomalies for solar panels, provide more accurate data for solar power station inspection, ensures normal operations for solar power stations, and also provides reliable data support for maintenance and repair.

SAGA Case Study 2

Testing the Solar Power System -- 800X600 Infrared Camera

Content : SAGA, using a 800x600 HD infrared intelligent camera, can accurately collect temperature information of solar panels, quickly identify abnormal hot spots from tens of thousands of solar panels, distinguish damaged infrastructure in great detail, all while locating safety risks, reducing costs, and increasing efficiency.

Advantages : Not affected by the environment, highly efficient, convenient payloads, supports Smart Shot, intelligent obstacle avoidance, gesture recognition, accurate real-time information collection, intelligent software processing

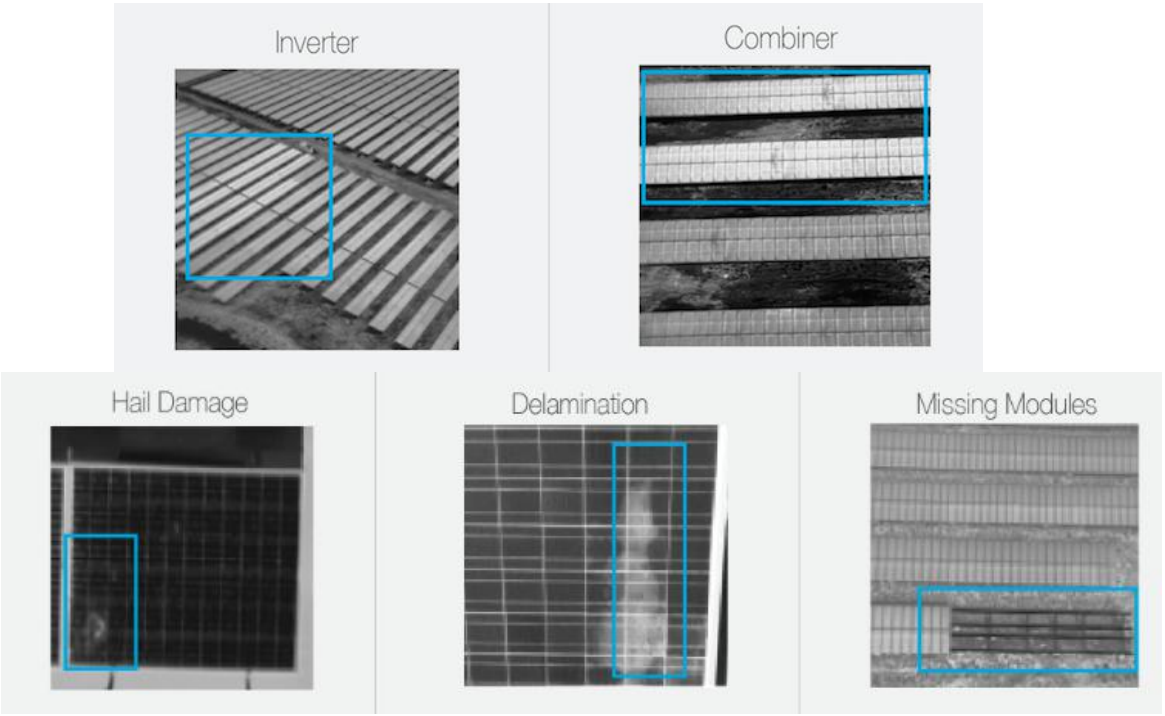
SAGA Case Study 3

Testing the Solar Power System -- 30X Optical Zoon Camera

Content：Once equiped with a 30X optical zoom camera, SAGA can accurately collection information to find out whether solar panels have hot spots, are mismatched, and if they are broken or damaged. Therefore, SAGA is convenient for solar panel inspection tasks and provides clear and reliable support for data collection, processing, and analysis.

Advantages：Not affected by the environment, highly efficient, convenient payloads, supports Smart Shot, intelligent obstacle avoidance, gesture recognition, accurate real-time information collection, intelligent software processing

SAGA Case Study 4



Solar Panel Abnormality Detection

Content：SAGA will identify various abnormalities (such as battery hotspots, multi-cell hotspots and activated bypass diodes) in the solar module framework, strings may be reversed or failed, and inverters be offline. By carrying a 4K HD camera, 30X camera, infrared camera, or other intelligent payloads, SAGA can accurately and comprehensively collect information of solar panels, strings, inverters and combiners, and can quickly perform inspections using real-time HD imaging for routine maintenance.

Advantages：Environmental adaptability, timely information collection, high security, rapid inspection and identification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