GeoSat Microwave

- *Border Defense;*
- *Coastal Line Monitoring;*
- *Airport & Harbour Monitoring;*
- *Space Field Monitoring;*
- *Vessel/Ship Monitoring;*

CE

## Zeous's Eye Intelligent Dual Sensor Optical Platform

**Model: GSM0050Z**

| Model | GSM0050Z |
|---|---|
| **Option 1: Uncooled Thermal Camera** | |
| **Detection** | Vehicle:13000m |
| | Human:4800m |
| **Identification** | Vehicle:3400m |
| | Human:1300m |
| **Sensor** | 5th generation uncooled focal plane array VOx Detector |
| **Resolution** | 640 × 512 pixel |
| **Spectral range** | 7.5～14μm |
| **NETD** | 50mK (@25℃F1.0) |
| **Focal length** | 31 - 155mm, 0.45 - 0.09mrad |
| **Field of view(horizontal)** | 20° × 15° - 4°× 3° |
| **Len Control** | |
| 1. Zooming: Motorize Zoom.<br><br>2. Focusing: Manual/Auto Focus (3A adaptive active focusing algorithm, supports multiple trigger modes with high precision and speed).<br><br>3. Optical machine: 3CAM mode and AS+DOE optical structure, high infrared over transmission, zoom process without virtual focus, smaller axis. | |
| **Image processing** | |
| 1. Image enhancement: SDE digital image processing.<br><br>2. Pseudo colour polarity: 16 pseudo color and B/W, B/W conversion. | |

3. Image parameter: AGC automatic gain control, brightness and contrast.

4. Digital zoom: 2X, 4X digital amplification.

5. NUC Correction: Auto/Manual correction, background correction.

6. Hot-points analysis: support multiple hot-points box show alarm function.

## Visible Camera (Compulsory)

### Camera

1. Surface: 1/1.8" Star Level CMOS, Integrated ICR Dual Filter D/N Switch;

2. Resolution: 2 million pixels, 1920 x 1080

3. Illumination: 0.002Lux high sensitive colour, 0.0002Lux black and white;

4. Encoding: H.265/H.264/MPEG4/MIPEG video format, supporting multi-stream;

5. Video Bit Rate: 32Kbps-16Mbps, 60Hz 30 frames/second

6. Support SD card local storage, support regional invasion, cross-border invasion, face detection, audio anomaly detection, alarm linkage;

7. Supports AFR fog penetration, electronic anti-shake, strong light suppression, 3D digital noise reduction, anti-infrared overexposure, ABF automatic rear focus adjustment function

### Lens

1. Focal Length: 22 - 750mm, 200 mil electrical focus (Optional: 12.5 - 750mm lens);

2. HD infrared correction: Optical IR correction design, diurnal focus;

3. Auto aperture: support;

4. Night-day wide spectrum: 0.4-0.75um visible broad spectrum window and 0.8-0.95um NIR narrow spectrum window with day-night independent double-pass window to improve the signal-to-noise ratio of imaging light and stray light.

5. Preset position: precision potentiometer, DC5V, zoom focusing feedback

6. Interface: C/CS

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| Fog Penetration | Optical filtering and AFR optoelectronic enhanced image processing technology, color penetrate fog |

## Laser (Optional)

### Laser Light Source

1. Consumption: 15W;

2. Wavelength: 810nm;

3. Laser angle: 0.5°～20°;

4. Encapsulation: the illuminator is sealed with inert gas to prevent oxidation;

5. Using distributed laser design, laser emitter and high-temperature components are directly affixed to the shell’s cooling fins, that have stronger heat dissipation capability if compared with the modular laser.

### Laser Lens

1. Lens form: 60X f1.2-80mm ultra-short focal zoom patented technology, laser 600 micron cross-section imaging lens;

2. Transmittance: multi-layer NIR Anti-reflective coating, high efficiency laser coupling;

3. Homogenization: GHT-II super homogenization HD illumination patented technology, full focus spot brightness equilibrium is > 92%;

4. Laser Safety: Using ZQB safety laser beam processing patented technology, which complying with International IEC60825 Safety Standard;

5. Focus Angle Positioning: Precision digital drive positioning.

*Spot form: (Optional: elliptical spot illuminator - the spot always keeps elliptic in the process of change, better matching with 16:9 HD camera picture, where the laser utilization rate increased by 30%)*

**Angle & Distance Matching**

1. Matching method: Automatic tracking or manually fine-tuning intelligent matching method;

2. Synchronization control: DSS digital stepping illumination angle control technology, 0.1 degree precise servo control;

3. Response time: Z-super laser angle and imaging ratio matching algorithm, tracking response time less than 500 ms;

4. Synchronization effect: Laser synchronization effect adjusts the modes of cut-in, cut-out and full-screen coverage, which can be set arbitrarily according to the scene remotely.

5. Optical axis alignment: SLM double optical axis self-locking alignment device, the accuracy can reach 0.01 degrees, reserve external alignment window, without cover removal maintenance

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| Laser Switch | 1. Control mode: Mandatory opening, mandatory closing and photosensitive automatic control, can be set remotely.<br>2. Photosensitive synchronous control: independent photosensitive control circuit, precise synchronous switching of laser switch and camera into day-night mode.<br>3. Data Processing: Built-in Intelligent Anti-Strong Light Jamming Algorithms, Shielding the False Switches Caused by Strong Light at Night |

**Other Enhancement Functions (Optional)**

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|---|---|
| Laser Rangefinder | 1. Measuring range: 50 - 3000m OR 50 - 5000m OR 100 - 8000m;<br>2. Accuracy: ±3m;<br>3. Frequency: 0.2Hz;<br>4. Wavelength: 1570nm (eyes safe);<br>5. Interface: RS422. |
| GPS/BeiDou | 1. Positioning Accuracy: Position <5m, Speed <0.1m/s;<br>2. Timing: 1us;<br>3. Sensitivity: -159dBm;<br>4. Positioning Information Update Frequency: 1Hz;<br>5. Output Interface: TTL, NMEA0183 protocol;<br>6. Weight: 127g |
| Electrical Compass | 1. Heading Accuracy: 0.5° (@Tilt < 40°), 0.7°RMS (@Tilt < 60°), 1°RMS (@Tilt < 80°), precision repeatability: 0.1°; |

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| | 2. Tilt Accuracy: 0.1°;<br>3. Rooling Accuracy: 0.1° (@ < 80°);<br>4. Resolution: 0.01°;<br>5. Tilt Margin: ±80°;<br>6. Correction: Hardware/software/Tilt calibration;<br>7. Weight: 180g. |
| **PTZ** | |
| Shape | 1. Wind resistant: Dome Shape housing, multi-dimension free-form surface, small wind resistance, strong vibration resistance, resisting to 33m/s wind.<br>2. Upper & lower parts' separation design, separate packaging and delivery independently, fast integration.<br>3. Upper & lower dual-windows design, able to carry two different sensors at the same time. |
| Rotation Range | 1. Pan: N x 360° continuous spin, mechanical locking after power failure/power-off.<br>2. Tilt: -90°～+90°<br>3. Tilt possesses software stroke limit function, through program setting. |
| Rotation speed | 1. Pan: 0.01°～80°/S;<br>2. Tilt: 0.01°～60°/S;<br>3. Acceleration: pan 100°/$s^2$, Tilt 100°/$s^2$<br>4. Speed adaptation: with intelligent induction speed change function, support lens focus speed adaptive function.<br>5. Speed mode: highest speed mode setting.<br>6. Driving mode: drive with high torque rare earth permanent magnet synchronous motor, high-speed start-stop, smooth linkage tracking with radar |
| Positioning Accuracy | 1. Accuracy meet 0.02°, drive with High Frequency Fine Tuning Pulse Precision Motor, Digital Angle Sensor Servo;<br>2. Position Timing: less than 4s. |
| Platform Zero-Point | 1. Null-point setting: support PT null-point setting;<br>2. Auto north-pointing: Pan support to auto north-pointing function (build-in gyroscope seeking for north).<br>3. Auto zero setting: Tilt support auto zero setting.<br>4. |
| Cruise Scanning | 1. Preset: NOT less than 255 preset;<br>2. Path scanning: support preset cruising, day/night navigation, line-scanning, apple-skin scanning, with scanning speed setting.<br>3. Watch function: support watch preset/line-scanning/cruising/apple-skin scanning. |
| Data Return | 1. Lens Servo: Support lens field of view, magnification, ZOOM/FOCUS value query, return and positioning functions;<br>2. Turntable Angle: Support real-time/query-return and positioning functions for horizontal and pitch angles. |
| Enhancement Features | 1. Heating & defrosting: directional industrial window defroster, automatic heating temperature control;<br>2. Power-off memory: support to restore power-off status;<br>3. Motor Protection: Turntable Blocking Protection, High Reliability;<br>4. Fault Detection: Supporting Power-on Self-Detection, State Query and Fault Code Feedback;<br>5. Upgrade maintenance: remote restart, remote upgrade function, easy system maintenance. |
| Optional Functions | 1. Wiper;<br>2. Optical Network; |

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| | 3. Network power supply. |

**Environment Parameter**

1. Operating temperature: -40 ~ +60;
2. Storage temperature: -45°～ +70°;
3. Humidity: <90%
4. Sealing: the whole machine is airtight (optional: sphere filled with nitrogen)
5. Lightning surge protection: 4000V power supply, 2000V communication video signal;
6. Salt-spray prevention: to C5-M level, at pH 6.5 to 7.2, continuous spray for 700 hours, still can work normally;
7. Anti-vibration: meet the environmental requirements of GJB150A.16 Truck-Highway Transportation environmental requirement;
8. Protection Level: IP66

**Other Specifications**

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| Interface | 1. Network interface: 1-channel 10M / 100M adaptive Ethernet port (containing visible image + HD + RS422/RS485 control);<br>2. Power supply: 1-channel DC48V;<br>3. Military-grade waterproof aviation plug |
| Protocol | 1. Network Protocol: TCP/IP, UDP, IPv4/v6; support HTTP, RTP, RTSP, NFS, DHCP, NTP, SMTP, SNMPv1/v2c/v3, UPNP, PPPoE, DNS, FTP; support PSIA, ONVIF2.0, GB28181 network protocols;<br>2. PTZ control protocol: Pelco-P, Pelco-D and other industry-standard protocol, baud rate 2400, 4800, 9600, 19200 alternative, proprietary protocols can be customized. |
| Environment Protection Certification | Used of environmental friendly material, in line with EU RoHS environmental friendly with no harmful substances standard. |
| Power supply | 1. Power Supply: equipped with ultra-wide input power adapter,AC90V-305V turned DC48V.<br>2. Consumption: platform highest power consumption ≤500W, stable consumption ≤150W. |
| Weight | ≤70KG (excluded cameras) |
| Dimension | Φ480mm×H825mm |

**Intelligence Function (Optional)**

1. Auto-tracking system;
2. Anti-drone tracking system;
3. Panoramic stitching;
4. Radar linkage;
5. Hot-point alert;
6. Patrol detection;
7. 3D zooming/positioning selection;
8. Analysis: Invasion, leaving, straggling, retention, lingering, target trajectory.

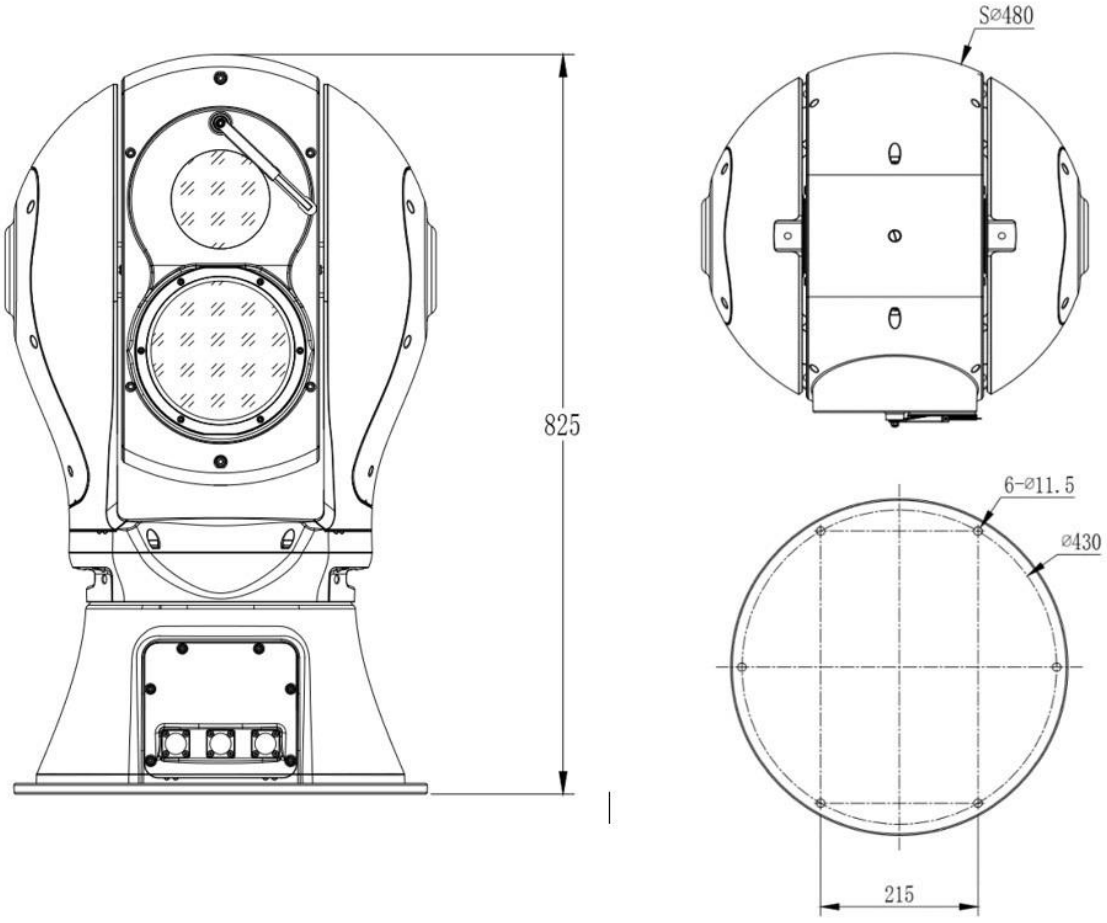
(The above functions need to be implemented in conjunction with general software and network modules)

**GPS (Optional)**

1. Positioning accuracy <5 meters,
2. optional Compass positioning,
3. Speed Accuracy< 0.1m/s,
4. Sensitivity: -159dBm.
5. Location information update frequency: 1Hz
6. Output interface: TTL, NMEA0183 protocol



Mechanical Diagram (Unit: inch (mm))




Forest Fire Detection

Oil Field Fire Protection

City Surveillance

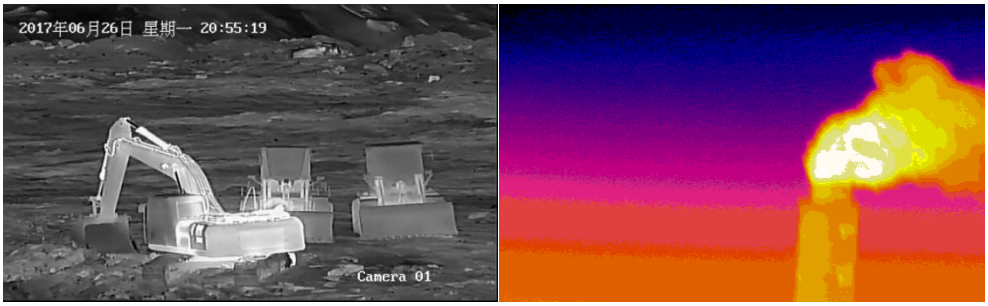
River & Lake Monitoring


Oilfield Monitoring


Harbour Monitoring Sea Farming Monitoring

## Intelligent System and Functions (Optional):

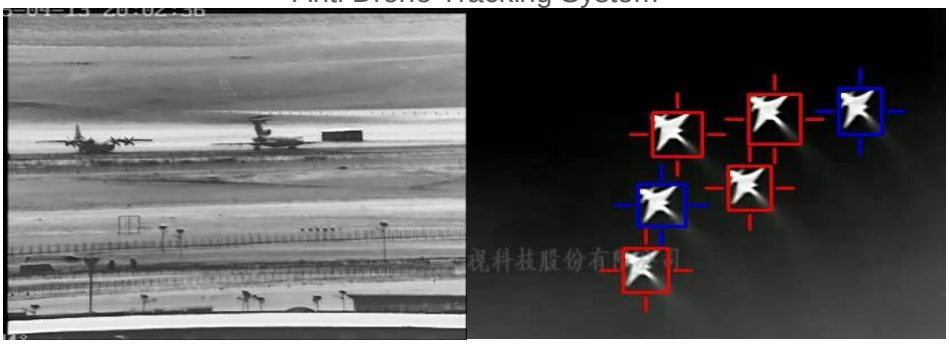

Intelligence Area Defense and Alert System




Environment Protect Air Pollution Detection


Airport Protection


Anti Drone Tracking System

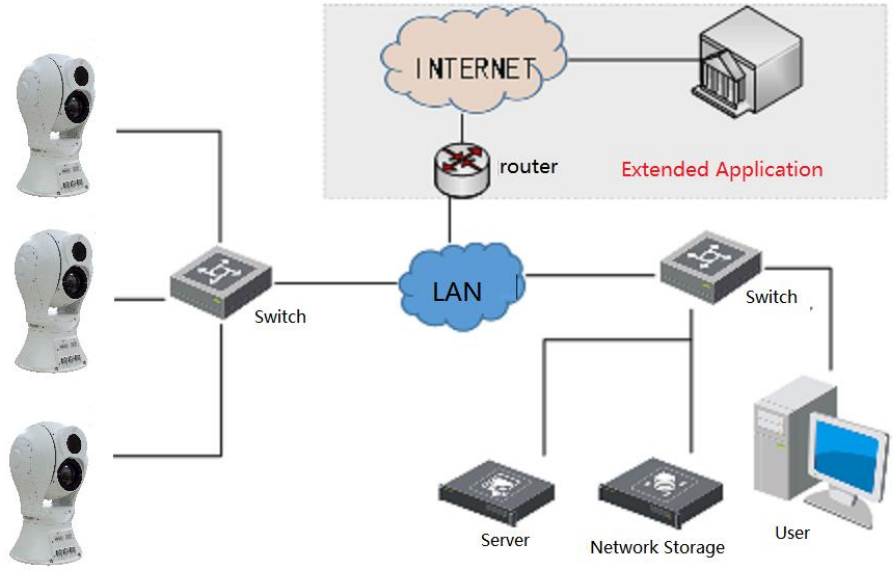


Military Base Protection


Coastal Line Border Defense


Border Defense Tracking System


Long Range Performance (Moon)




Networked Intelligent Application