

D-90U Intelligent 4K Full-Color Night-Vision Tri-Sensor camera



Products Features

- Integrates an 80× hybrid zoom camera, a thermal imaging camera, and a laser rangefinder, providing an enhanced all-weather operational experience.
- 4K resolution with AI-ISP full-color night vision image processing engine.
- Capable of providing distance and coordinate information of observed targets, enabling fast and accurate positioning.
- Built-in AICore, supporting AI multi-target detection and tracking. It can intelligently identify pedestrians and vehicles in the captured scene and continuously lock and track any selected target.
- Features a compact spherical body with a non-orthogonal 3-axis mechanical stabilization structure, significantly reducing rotation radius and wind resistance. The yaw axis supports $360^\circ \times N$ continuous rotation.
- Supports network, serial, and S.BUS control, compatible with proprietary protocols and MAVLink, enabling convenient secondary development.
- Utilizes a dual-IMU complementary algorithm, with IMU temperature control and fusion with aircraft inertial navigation data, achieving $\pm 0.01^\circ$ stabilization accuracy, maintaining stable imaging even under aggressive aircraft maneuvers.
- Supports underslung and top-mounted installation, enabling fast mounting to various UAV platforms.
- Compatible with Dragonfly control software, allowing real-time image display and gimbal control on PC without protocol integration; supports online downloading of photos and videos.
- Compatible with customized QGC (QGroundControl) software, enabling full gimbal functionality when used with open-source flight controllers.
- Supports overlay display of OSD information (latitude, longitude, altitude, etc.); photos support embedding shooting point coordinates in EXIF; real-time video stream and recordings support SEI metadata writing.
- Wide voltage input: 20–53 VDC.

Product Specifications

Product Name	D-90U
Dimensions	96.4 × 96 × 147 mm

Weight 620 g
Operating Voltage 20–53 VDC
Power Consumption 10.5 W (average, ranging off) / 55 W (stall, ranging on)
Installation Method Underslung / Top-mounted

Target Positioning Accuracy

(Measurement from gimbal mounted on dual-antenna RTK UAV)

Horizontal Distance / Relative Height Horizontal Error Vertical Error

105 m / 75 m	1.8 m	0.7 m
513 m / 119 m	17.4 m	6.7 m
1003 m / 246 m	33.8 m	13.7 m

Gimbal

Type Non-orthogonal 3-axis mechanical stabilization
Stabilization Accuracy $\pm 0.01^\circ$
Control Range Pitch -175° to $+105^\circ$, Roll $\pm 50^\circ$, Yaw $\pm 360^\circ$ continuous
Maximum Control Speed $\pm 200^\circ/\text{s}$

Zoom Camera

Sensor 1/2.8" CMOS, 8.29 MP
Lens 6.1–61.4 mm (Optical 10× Zoom), f/1.8–f/2.6
FOV HFOV 48.8° – 5.2° , VFOV 28.6° – 2.9° , DFOV 55.0° – 6.0°
Resolution 3840×2160 (4K)
Pixel Size $1.45 \mu\text{m}$
Digital Zoom 8×

Target Detection Range (EN62676-4:2015)

Person: 1854 m / Small Vehicle: 2436 m / Large Vehicle: 5190 m

Target Recognition Range

Person: 371 m / Small Vehicle: 487 m / Large Vehicle: 1038 m

Thermal Imaging Camera

Sensor Uncooled VOx Detector
Resolution 640×512
Pixel Size $12 \mu\text{m}$
Lens 19 mm, f/1.0
FOV HFOV 22.9° , VFOV 18.4° , DFOV 29.0°
NETD $< 50 \text{ mK}$ @ f/1.0 @ 25°C
Digital Zoom 8×

Temperature Measurement (Optional)

Measurement Range High Gain: -20°C – 150°C / Low Gain: 0°C – 550°C
Modes Point & Area Measurement

Alarms High/Low Temperature Alarms

Anti-Sunburn Protection Supported

Color Palettes: White Hot, Black Hot, Outline, Lava, Iron Red, Medical, Arctic, Rainbow 1, Rainbow 2

Laser Rangefinder

Wavelength 905 nm

Max Power 1 mW

Beam Divergence 5 mrad

Spot Diameter 0.5 m @ 100 m

Accuracy ± 0.1 m

Range 5–2000 m (target reflectivity 20%, diameter ≥ 12 m)

Eye Safety Class 1M (IEC 60825-1:2014)

AI Multi-Target Tracking

- Recognition Size $\geq 30 \times 20$ px
 - Recognition Rate $\geq 85\%$
 - Tracks up to **50 targets**
 - Tracking Output Delay ≤ 60 ms
 - Tracking Speed > 24 px/frame
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Photo & Video

Photo Format JPEG, 1920×1080 Max

Video Format MP4, 1080p@30fps (Stream & Recording)

Encoding H.264 / H.265

Stream Protocol RTSP

OSD Time, Attitude, Coordinates, Distance, Zoom, Storage Status

EXIF Time, Gimbal Attitude, Target/Platform Coordinates, Distance

Storage microSD up to 256GB (U3/V30 or above)

Environmental

Operating Temp -20°C to $+50^{\circ}\text{C}$

Storage Temp -40°C to $+60^{\circ}\text{C}$

Humidity $\leq 85\%$ RH (Non-condensing)