

# D-90N Intelligent Full-Color Night-Vision 3-Sensors Camera



## Features

- Integrates a 40× hybrid zoom camera, a thermal imaging camera, and a laser rangefinder, delivering a new level of all-weather operational performance.
  - Equipped with an ultra-starlight image sensor, together with the AI-ISP full-color night vision imaging engine, providing night-vision-grade low-illumination imaging.
  - Capable of outputting distance and coordinates of observed targets, allowing fast and precise target positioning.
  - Built-in AICore supports AI multi-target detection and tracking, automatically identifying pedestrians and vehicles in the scene and continuously locking and tracking any selected target.
  - Compact spherical design with a non-orthogonal 3-axis mechanical stabilization structure, minimizing rotation radius and wind resistance. Yaw axis supports 360° × 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, enabling  $\pm 0.01^\circ$  stabilization accuracy, ensuring stable imaging even during aggressive aircraft maneuvers.
  - Supports both underslung (bottom-mounted) and top-mounted installation, allowing quick integration with various UAV platforms.
  - Compatible with Dragonfly control software, enabling real-time video display and gimbal control on PC without protocol integration, and supports online photo/video download.
  - Compatible with customized QGroundControl (QGC) software to achieve full gimbal function when paired with open-source flight controllers.
  - Supports OSD overlay of latitude, longitude, altitude, etc.; photos embed shooting location EXIF data; real-time video streams and recordings support SEI metadata.
  - Wide voltage input: 20–53 VDC.
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## Products Specifications

Product Name	D-90N
Size:	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 (Measured when mounted on dual-antenna RTK UAV)	

### 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

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## Gimbal

Type	Non-orthogonal 3-axis mechanical stabilization
Stabilization Accuracy	±0.01°
Control Range	Pitch -175° to +105°, Roll ±50°, Yaw ±360° continuous
Maximum Control Speed	±200°/s

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## Zoom Camera

Sensor	1/2.8" CMOS, 2.07 MP
Lens	6.1–61.4 mm (Equivalent: 41.6–415.8 mm)
Aperture	f/1.8–f/2.6
FOV	HFOV 48.8°–5.2°, VFOV 28.6°–2.9°, DFOV 55.0°–6.0°
Resolution	1920 × 1080
Pixel Size	2.9 μm × 2.9 μm
Optical Zoom	10×
Digital Zoom	4×

### Target Detection (EN62676-4:2015)

Person: 927 m / Small Vehicle: 1218 m / Large Vehicle: 2595 m

### Target Recognition (EN62676-4:2015)

Person: 185 m / Small Vehicle: 244 m / Large Vehicle: 519 m

### Target Identification (EN62676-4:2015)

Person: 93 m / Small Vehicle: 122 m / Large Vehicle: 260 m

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## Thermal Imaging Camera

Detector	Uncooled VOx Microbolometer
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°
Digital Zoom	8 $\times$
Wavelength Range	8–14 $\mu\text{m}$
NETD	< 50 mK @ f/1.0, 25°C

#### **Detection / Recognition / Identification (Johnson Criteria)**

- Person: 750 m / 188 m / 94 m
- Small Vehicle: 2300 m / 575 m / 288 m
- Large Vehicle: 4900 m / 1225 m / 613 m

#### **Optional Temperature Measurement**

Measurement Range	High Gain: -20°C~150°C / Low Gain: 0°C~550°C
Measurement Mode	Spot & Area
Alarms	High / Low Temperature

Anti-Sunburn Protection Supported

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

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#### **Laser Rangefinder**

Wavelength	905 nm
Max Power	1 mW
Beam Divergence	5 mrad
Spot Size	0.5 m @100 m
Accuracy	$\pm 0.1$ m
Range	5–2000 m (reflectivity $\geq 20\%$ , target $\geq 12$ m diameter)
Eye Safety	Class 1M (IEC 60825-1:2014)

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#### **AI Multi-Target Detection & Tracking**

Min Detection Size	$\geq 30 \times 20$ px
Recognition Rate	$\geq 85\%$
Max Targets Tracked	$\leq 50$
Tracking Resolution Range	16 $\times$ 16 ~ 256 $\times$ 256 px
Update Rate	30 Hz
Output Latency	$\leq 60$ ms
Tracking Accuracy	$\leq \pm 1$ px
Tracking Speed	>24 px/frame
Target Memory Time	>5 s

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## Photo & Video

Photo Format	JPEG (Max 1920 × 1080)
Video Format	MP4
Max Resolution	1080p @ 30 fps (live stream & recording)
Encoding	H.264 / H.265
Streaming Protocol	RTSP
OSD	Time, Gimbal Attitude, Target/Platform Coordinates, Range, Zoom, Storage Status
EXIF Metadata	Time, Gimbal Attitude, Target Coordinates, UAV Coordinates, Range
SEI Metadata	Supported (see user manual)
Storage	microSD up to 256GB, U3/V30 or above

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## Environmental

Operating Temperature	-20°C to +50°C
Storage Temperature	-40°C to +60°C
Operating Humidity	≤85% RH (non-condensing)