PD-1 Unmanned Aerial System
One stop UAS solution for civil and military applications

www.ukrspecsystems.com
Made in Ukraine
PD-1 is multipurpose modular fixed-wing UAV. It can be easily customized for any mission and operated in different weather conditions. Our drone is packed with high-end technology, featuring reliable flight controller, AES 256 encrypted digital data link, inertial navigation unit and much more. Integrated EO/IR gyro-stabilized gimbal provides superior video quality and detailed view of the target, combined with encrypted Full HD video downlink it allows to broadcast live video in 50 km range.

**USG-212 & USG-211 GYRO-STABILIZED GIMBALS**

- Full HD camera with 30x optical zoom
- High quality IR camera
- Geo reference
- Target tracking
- KLV metadata
- Weather sealed

**GROUND CONTROL STATION**

Modular GCS consists of two laptops (for drone and payload operators), data links on masts and network hub to connect everything together. Such design allows to easily configure GCS for any application and comfortably operate it during long-endurance missions.

**COMBAT PROVEN TECHNOLOGY**

PD-1 UAS has proved its capabilities in many government tests and currently being used by Ukrainian Armed Forces. Many hours of military operations in the East of Ukraine proved that PD-1 UAS can effectively complete military tasks in harsh environment with high risk of control and navigation signals jamming and spoofing attempts, and other active enemy counter UAV measures.

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PD-1
Unmanned Aerial Vehicle

Designed for different applications and tasks, PD-1 is a multi-purpose, highly customizable fixed-wing unmanned aerial vehicle. It can carry up to 10 kg of payload with full tank of fuel. Maximum takeoff weight is 40 kg. Airframe has modular design and does not require any tools to be assembled and disassembled thanks to quick lock system. Because of its aerodynamics PD-1 can be equipped with nearly any payload without balancing the airframe, modular design allows to quickly customize the drone according to the current task.

**Specifications**

<table>
<thead>
<tr>
<th>MTOW</th>
<th>40 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max payload</td>
<td>10 kg with full fuel tank</td>
</tr>
<tr>
<td>Wingspan</td>
<td>3.2 m or 4 m</td>
</tr>
<tr>
<td>Length</td>
<td>2546 mm</td>
</tr>
<tr>
<td>Power plant</td>
<td>4-stroke</td>
</tr>
<tr>
<td>Takeoff method</td>
<td>Runway/catapult/car top launch</td>
</tr>
<tr>
<td>Endurance</td>
<td>10+ hours</td>
</tr>
<tr>
<td>Service ceiling</td>
<td>3000 m</td>
</tr>
<tr>
<td>Cruise speed</td>
<td>25 m/s</td>
</tr>
<tr>
<td>Stall speed</td>
<td>16 m/s</td>
</tr>
<tr>
<td>Takeoff run</td>
<td>80 meters (fully loaded)</td>
</tr>
</tbody>
</table>

**Catapult launcher and parachute recovery**

Optionally PD-1 UAV can be equipped with pneumatic catapult launcher and parachute recovery system. This upgrade simplifies takeoff and landing procedures.
Advanced Aerial Surveillance System

Our surveillance system consists of EO/IR gimbal, encrypted long-range Full HD video downlink and ground control station. In addition, it allows to stream Full HD video from PD-1 UAV to multiple portable video receiver in range of 50 km.

- Full HD day-view camera with 30x optical zoom
- High performance thermal camera
- Real-time video processing
- 50 KM Full HD encrypted video downlink
- Geo reference

Full HD day-view camera with 30x optical zoom and high performance thermal camera allows to detect and track targets on long distances.

Video processing package with digital video stabilization, target tracking and scene lock.

Data acquisition package with augmented reality, coordinates detection, NATO standard target marks and much more other great features. It is a perfect solution for search and rescue, military and border control applications.

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PD-1 UAS
Applications

Aerial Photo Mapping
High resolution 50-megapixel on-board camera allows to take detailed images of the Earth surface with georeference. From the altitude of 1000 meters PD-1 UAV offers 10 cm per pixel resolution.

- 50 MP camera with 50 mm lens
- Less than 10 cm per pixel image resolution
- Gyro-stabilized platform (optionally)
- Georeference
- Mapping software included

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**PD-1 UAS**

**Features**

**Fully autonomous flight**
Preprogrammed flight route, payload control, automatic return to start point and much more features available for autonomous operations.

**Automatic takeoff and landing**
PD-1 can automatically takeoff and land on the runway using numerous on-board sensors. Catapult launch and parachute recovery are also done in fully automatic modes.

**Fully composite airframe**
PD-1 airframe is fully made out of composite materials using latest technologies. It is lightweight and durable.

**Low radar detection**
Because of PD-1 fully composite airframe and absence of large metal parts it is hard to detect and track the UAV with radars and anti-aircraft systems.

**Low noise signature**
With 4-stroke engine and mufflers PD-1 UAV is acoustically unnoticeable on altitudes 400 m and above.

**Operate UAV via multiple Ground Control Stations**
PD-1 UAV has an ability to be controlled by any authorized Ground Control Station in its operational range. In addition, video and other intelligence information can be streamed to multiple GCS or portable terminals at the same time. This allows to extend operation range and allow multiple groups of UAV/payload operators to receive real-time data from the aerial vehicle.

**Modular design**
Modular design of the system allows to add, remove or replace any on-board equipment. This allows to customize the system to fulfill any requirements and complete wide range of tasks.

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**Engine**
Reliable 4-stroke engine for 10+ hours endurance.
Electronic Fuel Injection upgrade is available to maximum endurance (up to 30% fuel economy).

**On-board starter/generator**
Remote engine start, automatic engine restart in flight, 80W on-board generator. All in one compact package.

**Fuel tank**
12 litres fuel tank. Maximum fuel reserve for maximum autonomy.

**Modular design**
Flight preparation in less than 10 minutes.
3.2 or 4 meters wing-span options.
Quick chassis remove for catapult launch.
Quick payload bay access.

**Catapult/car top launch/trolley start**
Allows to launch UAV from nearly any unprepared location. Car top launch option is also available.

**Parachute recovery**
Landing never been so easy. All landing procedures are done in automatic mode. Parachute/runway landing is fully controlled by flight controller.

**Sensors (fuel level, temperature, RPM, etc.)**
Internal temperature, outside temperature, engine temperature, fuel level sensors and much more. Get detailed and accurate data from UAV.

**ADS-B transponder, navigation lights, radars**
More and more drone regulations comes in place, defining how and where drones can be used. Safety first. Add those features to make sure your drone is visually visible and can be detected by other aircrafts.

**REACH TO “MILITARY-GRADE”**
We offer wide variety of military-grade options for Law Enforcement and Armed Forces. Including Mil-Std data links, active anti-jam antennas and much more. Please contact us for more information and case studies.
PD-1 UAS
Payload options

**USG-212 EO/IR gimbal**
Perfect for day and night surveillance and reconnaissance. Includes target tracking, electronic video stabilization, target acquisition features.

**USG-211 Full HD gimbal**
Full HD EO sensor gimbal. Suitable for application specific missions where only one sensor is needed.

**Aerial photo mapping package**
High resolution photo camera installed on gyro-stabilized gimbal to ensure clear and stable pictures. Includes photo mapping software.

**Full HD video link**
50 KM Full HD encrypted video link. Features video broadcast option that allows to stream video to multiple ground terminal in real-time.

**Multispectral NDVI cameras**
Perfect solution for agriculture applications.

**Synthetic Aperture Radar (SAR)**
Allows to take high-resolution images (using radio waves) in any weather conditions.

**Radiation measurement**
Remote radiation measurements.

**LIDAR**
Allows to take high-resolution images (using laser technology).

**Radio repeater**
You can install military radio, IP data modem or any other type of repeater to extend range of operations of radio equipment.

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PD-1 UAS Technical specifications

**PD-1 UAV Specifications**

- **Maximum takeoff weight**: 40 kg
- **Empty weight (with undrainable fuel)**: 22 kg
- **Payload weight**: 10 kg
- **Flight time with 2-storke engine**: 10+ hours
- **Flight time with EFI upgrade**: Up to 15 hours
- **Practical ceiling**: 3000 m
- **Speed range**: 70-140 km/h
- **Cruise speed**: 95 km/h
- **Stall speed**: 50 km/h
- **Fuel A-95**: Fuel A-95 gasoline mixed with oil
- **Deployment time**: 15 min
- **Launch**: Runway, catapult, car top launch
- **Recovery**: Runway, parachute

**Dimensions**

- **Full length**: 2540 mm
- **Height**: 990 mm
- **Chassis track**: 670 mm
- **Cassius wheelbase**: 880 mm
- **Main wheel size**: 150x31 mm
- **Nose wheel size**: 127x31 mm
- **Wing area**: 1/17 m²
- **Wingspan**: 3190 or 4000 mm
- **Mean wing chord**: 392 mm
- **Tip wing chord**: 300 mm
- **Root wing chord**: 420 mm
- **Aileron area**: 2x0.06 m²
- **Flaps area**: 2x0.055 m²
- **Fuselage max width**: 266 mm
- **Fuselage max height**: 284 mm
- **Full projection area of V-tail on horizontal plane**: 0.278 m²
- **Full projection area of V-tail on vertical plane**: 0.123 m²

**Communications**

- **Telemetry radio link**
  - Range: 80 km
  - Encryption: Yes
- **Video downlink**
  - Range: 50 km
  - Format: Full HD 1080p
  - Encryption: Yes
  - Navigation: GNSS, inertial navigation unit