



MADE IN
UKRAINE

CDET

COMPANY OF DEFENCE AND
ELECTRONIC TECHNOLOGIES
LLC (CDET LLC)

“

Si vis pacem,
para bellum

“If you want peace,
prepare for war”

Flavius Vegetius

UNMANNED AERIAL VEHICLE "HaKI-20"



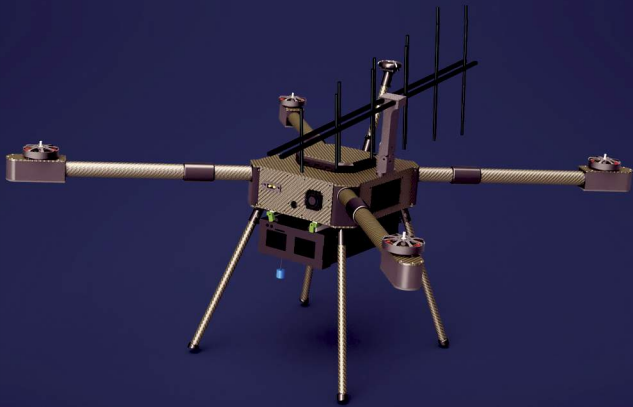
UAV "Hunter Killer" (HaKi-20) is an unmanned aerial vehicle created by Ukrainian engineers, which is designed to neutralize the enemy at a two-way distance of at least 1000 km with the ability to carry a payload weight of up to 15 kg.

Hunter Killer is a low-noise aircraft, designed for multiple implementations of tasks, has means of support: transport and launch device, communications, ground control point and more. The control of UAV is carried out remotely, using a special ground control station located outside the aircraft and implemented by a human operator from a stationary or mobile control panel.

Management is possible in autonomous, semi-autonomous and manual modes.

The advantages among other products include such characteristics as:

- Overall dimensions 1800x1500x220 mm;
- Weight 8900 g;
- Maximum range up to 1000 km;
- Accumulator battery 4S-3P 4500 mAh;
- 20x zoom camera;
- Maximum height 1500 m;
- Minimum height 16 m;
- Top speed 172 km/h;
- Cruising speed 160 km/h;
- Minimum speed 90 km/h;
- Working height 200 m;
- The duration of the flight in autonomous mode is up to 8 hours;
- The ability to carry a payload weighing up to 15 kg.



UNMANNED AERIAL VEHICLE "SKIFF"

"Skiff" is a complex designed for retransmission of a protected radio and video signal for all types of unmanned systems based on ground, air or surface, communication with which is carried out by two or more radio transmitters, distant from each other over long distances.

It can work for quite a long time at a height that will allow transmitting a direct and continuous signal to an unmanned platform, which is equipped with appropriate telemetry and video communication.

A self-powered repeater module and a set of antennas are attached to the "Skiff", which allow to increase the stability of communication transmission. In the process of application, the repeater drone rises first, which can be held above the operator at the appropriate height and/or moved to the side while maintaining control, after that the UAV is launched to its destination. Thus, with the help of UAV "Skiff" there is an opportunity to significantly increase the efficiency of combat operations to defeat enemy forces and means exclusively on the territory of the enemy.

The advantages of the complex "Skiff" include the following characteristics:

- ✓ **Size**
1800x1500x220 mm
- ✓ **Maximum height**
700 m
- ✓ **Protected case**
Made of durable material capable of withstanding adverse weather conditions
- ✓ **Accumulator battery**
4S-3P 4500 mAh
- ✓ **Camera analog**
1200 TVL
- ✓ **Maximum lifting speed**
3 m/s
- ✓ **Working height**
500 m
- ✓ **Maximum take-off weight**
10 kg

"SIRIUS-K"

MISSION PLANNING & CONTROL PLATFORM FOR LONG-RANGE DRONES



Benefits:

Effective automatic mission planning that leads to:

- Significant efficiency in destroying of enemy targets
- Fast mission planning for single or multiple drones
- Minimization of losses of drones on the way to the target (omitting antiaircraft and radioelectronic warfare known locations)
- Minimization of civil losses by omitting highly populated areas
- Minimization of human factor errors leading to higher percentage of successful missions

Automated effective mission planning for long-range drones takes into account:

- Terrain, including tending to use riverbeds and lower grounds to minimize chances be detected by enemy
- Ground obstacles (buildings, pylons, electricity lines, etc)
- Anti-aircraft and radiowarfare positions of enemy and their performance characteristics
- Cities and towns (omit them during flight planning)
- Weather conditions
- Performance characteristics of our drone

On-board device supports drone-flight autonomy and obstacle avoiding, and destroys mission information on drone interception by enemy to minimize chances to point of launch be found by enemy.

"KOMANDOR K-2"

GROUND STATION

Komandor K-2 is a universal command center that allows you to remotely control the unmanned vehicles of air, ground, surface type, which can conduct reconnaissance, artillery adjustment, strike operations and perform them as quickly, reliably and efficiently as possible.

The ground control station is made in the form of a case that contains the necessary equipment, has reliable protection against mechanical damage and allows viewing information, surveillance, recording, control regardless of location, weather and combat conditions.

The command center was designed on the requests of UAV operators participating in combat actions.



The advantages among other products include such characteristics as:

- ✓ **Overall dimensions**
1095x374x155 mm
- ✓ **Battery**
30 000 mAh
- ✓ **Working time**
6 hours
- ✓ **Monitor**
2 pcs. Full HD, 1920x1080, 22 inches
- ✓ Hardware control of flight modes with the ability to quickly adapt to the needs of the pilot and operator
- ✓ The ability to transfer live broadcast of analog and digital video directly to the Internet and automatic recording of video to computer memory
- ✓ The ability to use two monitors to watch videos or use them as a computer
- ✓ Built-in PID tuning panel, which is used for the initial setup of unmanned vehicles
- ✓ **Connectors**
USB, Ethernet, HDMI AVI IN-Out
- ✓ **RAM**
8 GB
- ✓ **Processor**
Intel core i3 12100
- ✓ **SSD-disk**
256 GB

UAV CONTROL AND TELEMETRY SYSTEM "CDET-TLM-2"



In addition, CDET TLM-2 transceivers have built-in antenna switches that allow external commands to switch the signal between two antenna outputs or to use both antennas for distributed reception.

Also, with the help of the software, it is possible to:

- Change the power of both transceivers in real time
- Put the radio line into radio silence mode and control the built-in antenna switch on two separate signal lines
- Display the input signal level of ground station and UAV receivers
- Display information about the number of transmitted packets per second (in %)
- Ensure a change in the frequency (in manual and automatic mode) of the "CDET VDD-1" video channel to complicate its interception and suppression
- Assign a unique line identifier for the simultaneous use of several UAVs in the same area with one ground station

The UAV control system from LLC (CDET) "TLM-2" is a two-way data transmission system with a maximum data transmission rate of up to 40 kbit/s in each direction with a UART(LVTTL) interface. It is built on the basis of transceivers with GFSK modulation and its own FHSS algorithm (frequency-hopping spread spectrum) with a frequency tuning speed of up to 180 jumps per second, and also allows you to form and change frequency tables (according to the pseudo-probabilistic law) at any time, for example, before each using a UAV or during its operation.

Reception and transmission between the base and the subscriber are carried out at different frequencies in the entire operating range. The operating ranges are not those commonly used by similar products and have a rather large ratio of the value of the highest frequency to the lowest, which is equal to 1.7.

At the ground control station, there are possible options for antennas with which the following range is provided:

- Omnidirectional antennas and line of sight - up to 15 km;
- Directional antennas and line of sight - up to 45 km;

- ✓ **Output power of transmitters, W, not less**
2
- ✓ **Power consumption, W, max**
8
- ✓ **Supply voltage, V**
10-17(3S-4S)
- ✓ **Overall dimensions, mm, max (WxDxH)**
64x105x16,5
- ✓ **Weight, g, max**
115

There is also a modification of the data transmission system called "Suprovid-30", which has a transmitter output power of 30W, and has a control range of up to 250km in line of sight.

DIGITAL VIDEO TRANSMISSION SYSTEM "CDET VDD-1"

This is a one-way system for transmitting coded video signals using the H.264 algorithm and encrypted using the AES256 algorithm. Its operating frequency can be changed in the range of 1350 - 1800 MHz with a step of 1 kHz according to the operator's commands through the control and telemetry system ("CDET-TLM-2") which is connected via a separate UART interface. The system supports both digital and analog formats of video signals:



HDMI

1080@60P, 1080@50P, 1080@30P, 1080@25P,
1080@24P, 1080@60I, 1080@ 50I, 1080@30I,
720@60P, 720@50P, 720@30P



CVBS

720*480 60I(NTSC), 720*576 50I(PAL)

The delay of the video signal depends on its format and is no more than 250 ms.

Characteristics of the receiver (ground equipment)

- The minimum sensitivity of the receiver, dBm.....- 98
(at characteristics BW=8MHz, QPSK, CR=2/3, GI=1/16)
- Supply voltage, V.....10-22(3S-5S)
- Power consumption in general, W, max.....15
- Analog video/audio connector type.....RCA
- Type of digital video connector.....HDMI
- Video streaming connector type.....RJ45
- Type of input interface of control signals.....UART (LVTTTL)
- Connection speed via UART (LVTTTL), bit/s
- demodulator.....9600
- amplifier (1).....57600
- Video streaming interface typeEthernet
- The range of working temperatures, °C,.....-20...+ 40

There is also a modification of this video signal transmission system called "CDET VDD-30", which has a transmitter output power of 30W and a line-of-sight transmission range of up to 250 km.



Characteristics of the transmitter (on-board equipment)

- Output power, W,.....2
- Supply voltage, V.....10-16(3S-4S)
- Power consumption in general, W,.....19
- Connection speed via UART
(LVTTTL), bit/s.....9600
- Overall dimensions, mm, no more (WxDxH)
- modulator.....110x95x20
- amplifier.....150x60x16
- Total weight, g, no more.....310
- The range of working temperatures, °C,.....-20...+ 40

UNMANNED AERIAL VEHICLE "OSA TX10"

UAV "OSA TX10" FPV drone is designed for reconnaissance, surveillance, adjustment, using it as a kamikaze. The FPV drone is equipped with a modern high-resolution video camera, has a special battery and other special equipment that allows you to collect intelligence and provide real-time information about the situation to military personnel on the ground.

The difference of this drone from other FPV is that its capabilities include effective communication range, high-speed space movement, low noise, and real-time video signal transmission over long distances.



This model allows you to penetrate places that are not accessible to most drones. With their help, you can repeat the terrain, fly into the windows of buildings, dugouts, and trenches, deep into the territory controlled by the enemy.

Also, FPV drones are effective against heavy weapons, as they can hit an enemy target with the help of a special ammunition discharge system and continue the mission.

Based on the above, its obvious advantage over classic FPV drones is its relatively low market value and effective realization of its capabilities in terms of targeted delivery of the combat kit to a place inaccessible to traditional fire weapons.

The advantages include such characteristics as:

- Supporting frame of own production.....10 inches
- Weight without rechargeable battery.....580 g
- Weight with rechargeable battery.....1300 g
- Maximum payload.....3.2 kg
- Payload.....3 kg
- Flight range in kamikaze mode.....up to 10 km
- Flight range in terms of discharge.....up to 6 km
- Maximum take-off weight.....up to 5 kg
- Maximum flight altitude.....up to 500 m
- Top speed.....100km/h
- Maximum speed with a load of65 km/h
- Protection class.....IP45
- FPV camera.....1200 TVL, 8 mp
- Maximum wind resistance.....14 m/s
- Temperature mode of operation.....-20+45 C
- UAV deployment time.....2 minutes

UNMANNED AERIAL VEHICLE "OSA-TX-8"



UAV "OSA TX8" is one of the most common types of unmanned aerial vehicles of Ukrainian production, such as kamikaze. This platform is easy to use, reliable and productive. The main difference is economy in production and high productivity in the use of UAVs. This type of UAV has a light design and high maneuverability, can stay in the air near the target for a long time and quickly attack it after receiving it the corresponding command.

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These UAVs come in different sizes and configurations, but all have high rates, which is confirmed by their use in combat conditions.

• Size.....	530x530 mm
• Frame of own production.....	8 inches
• Weight without rechargeable battery.....	490 g
• Weight with rechargeable battery.....	920 g
• Maximum payload.....	1.1 kg
• Payload.....	930 g
• Flight range in kamikaze mode.....	up to 10 km
• Flight range in terms of discharge.....	up to 6 km
• Maximum take-off weight.....	up to 5 kg
• Maximum flight altitude.....	up to 500 m
• Top speed.....	100km/h
• Maximum speed with a load of	65 km/h
• Protection class	IP45
• FPV camera	1200 TVL, 8 mp
• Maximum wind resistance.....	14 m/s
• Temperature mode of operation.....	-20+45 C
• UAV deployment time.....	2 min

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