AEROGARD VTOL / Fixed Wings UAV Models for Discovery and Surveillance

V2500-E VTOL ‘’BOZKUŞ-2” (Electrical Engine)

V3500-E VTOL ‘’GÖKTUĞ-V3” (Electrical Engine)

AEROGARD V3800 –H VTOL ‘’AYBARS-1”
(Hybrid, Electric + Liquid Fuel Engine, Payload 15 Kg.)

AEROGARD V3900 –H VTOL ‘’AYBARS-2”
(Hybrid, Electric + Liquid Fuel Engine, Payload 5 Kg.)

Strong
Innovative
Future Technology

AEROGARD VTOL 2500-E (BOZKUŞ-2)

Model	VTOL V2500-E
Takeoff	VTOL
Wing Span	2.5 m
Body Lenght	1.26 m
Maximum Takeoff Weight	13 Kg
Payload	1.2 Kg
Propulsion System	5xBrushless DC Motor
Stall speed:	16m/s
Material	Composite
Range /Data Link	25-50 Km (Optional)
Flight Time	120 min/1.5kg, 150 mim/1.2kg
Operational Speed	65 Km / h
Maximum Speed	105 Km / h
Altitude	MSL 10.000 ft
Ground Control Station	Dual Screen Windows GCS
Camera	Dual Sensor 30x Zoom and Thermal 640 px& LRF

Payload/Camera

Ground Control Station

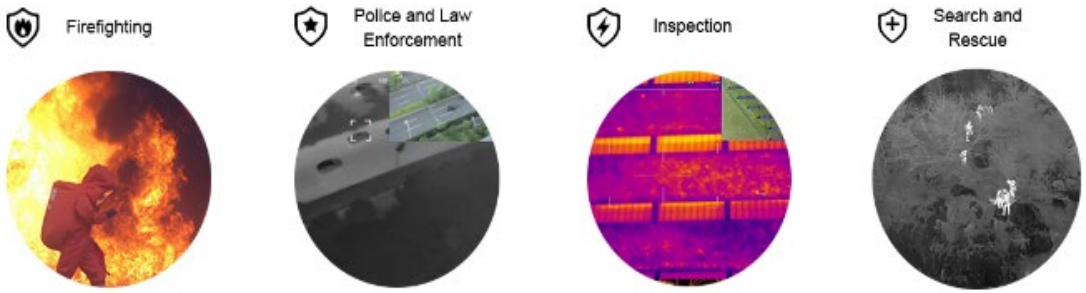
Automatic Antenna Sys.

Strong
Innovative
Future Technology

Q-30 Dual Sensor 30x Zoom and Thermal 640X480 Pixel & 3.000 Laser Range Finder

Hardware Parameter	
Working voltage	12V
Working environment temp.	-20℃ ~ +60℃
Output	micro HDMI(1080P 30/60fps) / IP (1080p/720p 30/60fps)
Local-storage	TF card (Up to 128G, class 10, FAT32 or ex FAT format)
Photo storage format	JPG(1920*1080)
Video storage format	MP4 (1080P 30fps/60fps)
Control method	PWM / TTL / S.BUS / TCP(IP output)
Gimbal Spec	
Mechanical Range	Pitch/Tilt: -60°～150°, Roll: ±45°, Yaw/Pan: ±300° / ±360°*N (IP output version)
Controllable Range	Pitch/Tilt: -45°～90°, Yaw/Pan: ±290° / ±360°*N (IP output version)
Vibration angle	Pitch/Roll: ±0.02°, Yaw : ±0.02°
Camera spec	
Imager Sensor	SONY 1/2.8" "Exmor R" CMOS
Picture quality	Full HD 1080 (1920*1080)
Effective pixel	2.13MP
Lens optical zoom	30x, F=4.3~129mm
Digital zoom	12x (360x with optical zoom)
Min object distance	10mm(wide end) to 1200mm(tele end). Default 300mm
Horizontal viewing angle	1080p mode: 63.7°(wide end) ~ 2.3°(tele end)
S/N ratio	more than 50dB
Min illumination	Color 0.01lux@F1.6
Exposure control	Auto, Manual, Priority mode(shutter priority & iris priority), Bright, EV compensation, Slow AE
Gain	Auto/Manual 0dB to 50.0dB, Max.Gain Limit 10.7 dB to 50.0dB
White balance	Auto, ATW, Indoor, Outdoor, One Push WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp (Fix/Auto/Outdoor Auto)
Shutter speed	1/1s to 1/10,000s, 22 steps
Backlight compensation	Yes
Aperture control	16 steps

Q-30 Camera System-1



NOTE:Q-30 Can be used for BOZKUŞ-2 and GÖKTUĞ-2

Strong
Innovative
Future Technology

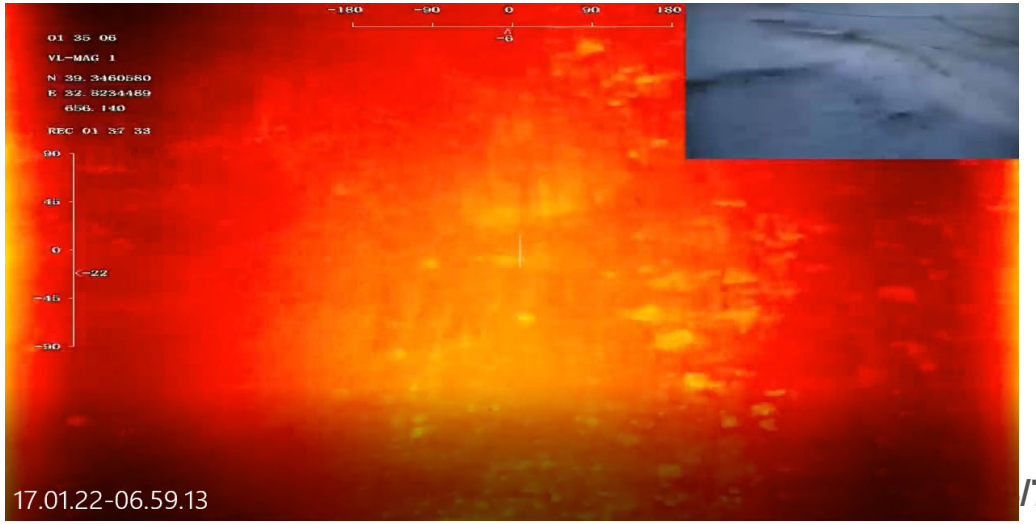
Dual Sensor 30x Zoom and Thermal 640X480 Pixel & 3.000 Laser Range Finder

Camera Object Tracking	
Update rate of deviation pixel	50Hz
Output delay of deviation pixel	5ms
Minimum object size	32*32 pixel
Maximum object size	128*128 pixel
Tracking speed	32 pixel/frame
Object memory time	100 frames (4s)
The mean square root values of pulse noise in the object position	< 0.5 pixel
Thermal imager spec	
Lens size	35mm
Horizontal FOV	17.7°
Vertical FOV	13.3°
Diagonal FOV	22°
Detective Distance (Man: 1.8x0.5m)	1029 meters
Recognize Distance (Man: 1.8x0.5m)	257 meters
Verified Distance (Man: 1.8x0.5m)	129 meters
Detective Distance (Car: 4.2x1.8m)	3157 meters
Recognize Distance (Car: 4.2x1.8m)	789 meters
Verified Distance (Car: 4.2x1.8m)	395 meters
Working mode	Uncooled long wave (8μm~14μm) thermal imager
Detector pixel	640*480
Pixel size	17μm
Image enhancement	Auto adjust image brightness and contrast ratio
Color palette	White, iron red, pseudo color
Digital zoom	1x ~ 4x
Thermal Object Tracking	
Update rate of deviation pixel	50Hz
Output delay of deviation pixel	5ms
Minimum object size	32*32 pixel
Maximum object size	128*128 pixel
Tracking speed	32 pixel/frame
Object memory time	100 frames (4s)

Strong
Innovative
Future Technology

Dual Sensor 30x Zoom and Thermal 640X480 Pixel & 3.000 Laser Range Finder

Laser Rangefinder	
Laser Wavelengths	1550nm
Optical aperture	Transmit 13mm / Receive17 mm
Resolution	0.75m
Measure ability	3000m (Typical value 1: · Object size: the target surface is larger than the laser spot area · Reflectivity: 60% · Accuracy rate: 90% · Visibility: 10 km · Environment temperature: 20℃ · Atmospheric pressure: 1013 mbar)
Vehicle target measuring	2300m (Typical value 2: · Object size: 2.3*2.3 m · Emissivity: 30% · Others same as Typcial value 1)
Eye-safe	Class 1【Standard IEC 60825-1, Second Edition (2007-03)】
Laser beam angle (Typical value)	1.0 mrad
Accuracy (Typical value)	± 0.75m
Accuracy (In harsh condition)	± 2m
Measurement frequency	2Hz
Multi-target measuring	Max.3 targets distance values returning
Object resolution (Typical value)	30m



Strong
Innovative
Future Technology

AEROGARD VTOL 3500-E (GÖKTUĞ-V3)

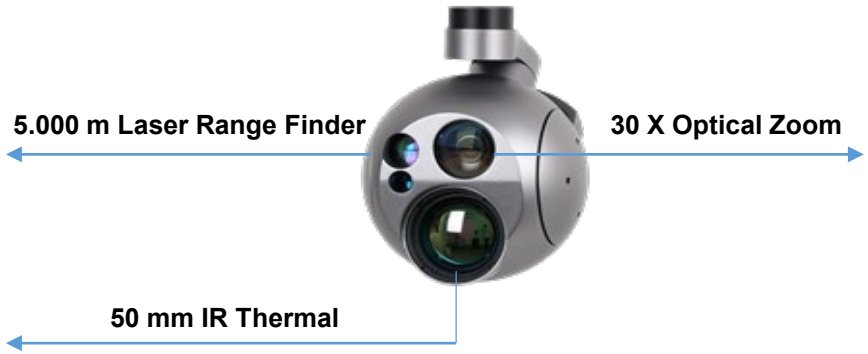
Model	VTOL V3500-E
Wing Span	3.5 m
Body Lenght	1.9 m
Maximum Takeoff Weight	30 Kg
Max. Payload	5 Kg
Propulsion System	5xBrushless DC Motor
Stall speed:	16m/s
Material	Composite
Range /Data Link	50-100 Km (Optional)
Flight Time	240 min/1.5kg, 180 mim/3 kg 120 min/5 Kg
Transponder	MODE S ADS-B Transponde
Anti Jamming	Anti-Jam GNSS CRPA System 8 Ant.
GSM-LTE Modüle	LTE-FDD B1/B3/B5/B7/B8/B20
Operational Speed	65 Km / h
Maximum Speed	108 Km / h
Altitude	MSL 12.000 ft
Ground Control Station	Dual Screen Windows GCS
Camera	Dual Sensor 67x Zoom and Thermal 640X512 px& 5.000 LRF

Payload/Camera

Ground Control Station

Automatic Antenna Sys.

30x optical zoom EO SONY camera, 50mm 640*512 12µm IR thermal sensor, and 5.000 Laser Range Finder



EO / IR Camera Object Tracking	
Update rate of deviation pixel	30Hz
Output delay of deviation pixel	<30ms
Minimum object contrast	5%
SNR	4
Minimum object size	16*16 pixel
Maximum object size	256*256 pixel
Tracking speed	>48 pixel/frame
Object memory time	100 frames

NOTE:140Z Can be used for GÖKTUĞ-2 and GÖKTUĞ-3

Strong
Innovative
Future Technology

30x optical zoom EO SONY camera, 50mm 640*512 12μm IR thermal sensor, and 5.000 Laser Range Finder

EO Camera AI Performance

Targets type	Car and human
Simultaneous detection quantity	≥ 10 targets
Min contrast ratio	5%
Min target size	5×5 pixel
Car detection rate	≥85%
False alarm rate	≤10%

IR Thermal Imager Spec

Focus Length	50mm
Coating Film	DLC
Horizontal FOV	8.8°
Vertical FOV	7.0°
Diagonal FOV	11.2°
Detective Distance (Man: 1.8x0.5m)	2083 meters
Recognize Distance (Man: 1.8x0.5m)	521 meters
Verified Distance (Man: 1.8x0.5m)	260 meters
Detective Distance (Car: 4.2x1.8m)	6389 meters
Recognize Distance (Car: 4.2x1.8m)	1597 meters
Verified Distance (Car: 4.2x1.8m)	799 meters

Strong
Innovative
Future Technology

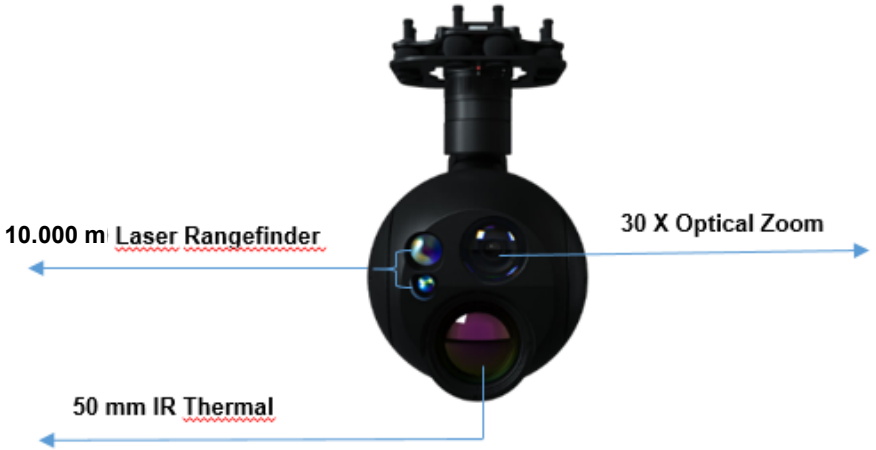
AEROGARD VTOL 3800-H (AYBARS-1)

Model	VTOL V3800-H
Takeoff	VTOL
Wing Span	3,8 m
Body Lenght	2,5 m
Maximum Takeoff Weight	50 Kg
Payload	10-15 Kg
Propulsion System (V)	4xBrushless DC Motor
Propulsion System (H)	1X100 cc EFI Engine
Material	Composite
Range /Data Link	25-150 Km (Optional)
Flight Time	2h-15kg payload, 4h-10kg payload
Operational Speed	100-120 km/h
Maximum Speed	130 km/h
Altitude	MSL 12.000 ft
Ground Control Station	Dual Screen Windows GCS
Camera	Dual Sensor 30x Zoom or 50x Zoom and Thermal 640X480 px & LRF

Payload/Camera

Ground Control Station

DUAL SENSOR & LRF CAMERA



Strong
Innovative
Future Technology

AEROGARD VTOL 3800-H (AYBARS-2)

Model	VTOL V3900-H
Takeoff	VTOL
Wing Span	3,9 m
Body Lenght	2,26 m
Maximum Takeoff Weight	35 Kg
Max. Payload	5 Kg
Propulsion System (V)	4xBrushless DC Motor
Propulsion System (H)	1X60 cc EFI Engine
Material	Composite
Range /Data Link	25-150 Km (Optional)
Flight Time	8h-3kg payload,
Fuel Tank	10 L
Operational Speed	80 km/h
Maximum Speed	130 km/h
Altitude	MSL 3.000 ft
Ground Control Station	Dual Screen Windows İ7 GCS
Camera	Dual Sensor 30x Zoom or 50x Zoom and Thermal 640X480 px & LRF
Operating Temperature	-20C° to +50C°

Payload/Camera

Ground Control Station

GROUND CONTROL STATION & SOFTWARE

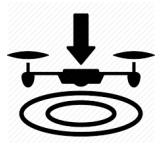
DESCRIPTIONS:

- High Definition&High Brightness
- Dual Touch Screens
- with Extended Touchpad
- Dual LCD screens with image display on the top screen and
- CCS interface on the bottom screen
- The top screen is an industrial grade 13.3" süper bright LCD, the definition is 1920*1080.
- The bottom screen is 12.1" LCD screen vvith 1500nits,
- even in the strongest sunlight.
- Ultra-sensitive 10-finger touch screen, able to avoid interference caused by accidental touch

Target /Object
Coordinate Determination

Object Tracking

Safe Return to Home



Safe Landing

NOTE:GCS Can be used for BOZKUŞ-2, GÖKTUĞ-2 and GÖKTUĞ-3

GROUND CONTROL STATION & SOFTWARE

GCS TECH SPECT

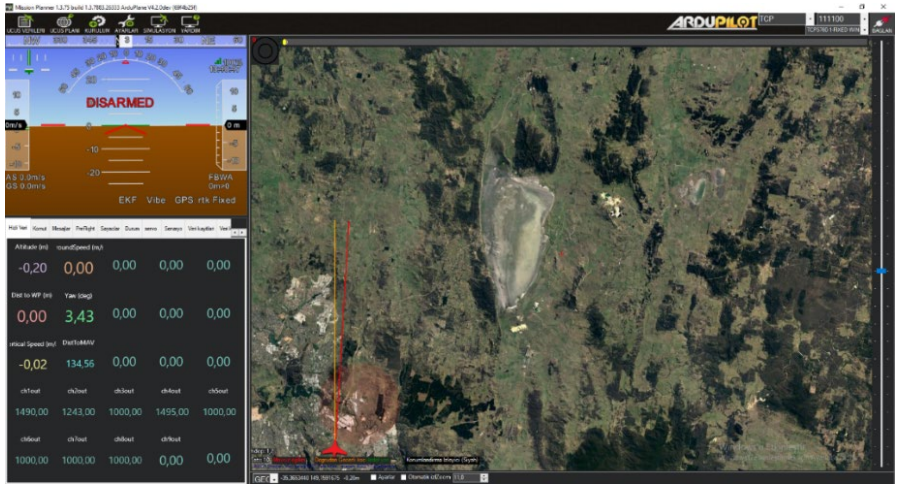
Overall weight	5980g	Dimension	354mm(L)*280mm(W) *80mm(H)
Operation temperature	-20^-+60^	Remote control latency	40ms
Battery capacity	16.8V/13600mAh (external power source also supported)	Endurance	3hs@full battery capacity
Physical channel	27	Touch pad	10-finger capacitive touch screen
	Main joystick*2 (industrial joysticks with hall sensors) Auxiliary rocker*4 Key buttons*12 Simulate keystrokes*7	Display screen	13.3inch1920*10801000nit (top screen) 12.1inch1280*8001500nit (bottom screen)
Remote control function	Dual SBUS independent output, able to control the vehicle and the payload simultaneously	Human interface	USB HID device
CPU	Intel i7 8565U(standard) Intel 10500U(upgrade for future)	Memory	8G(standard), 32G max
Operating system	Win7/win10/Linux	Storage	256GB SSD(standard), 1T max
Serial port	RS232*3, SBUS in/out	Network port	WIFI/Bluetooth(standard) 4G(optional)
External interface	USB3.0, LAN, HDMI in, VGA out, Hi-fi	Charging port	DC16.8V
Antennas	4dBi rod antenna/10dBi fiber-glass epoxy antenna (other antennas also can be connected externally)	Communication system	V21(10km grade) Supporting the 3rd party communication

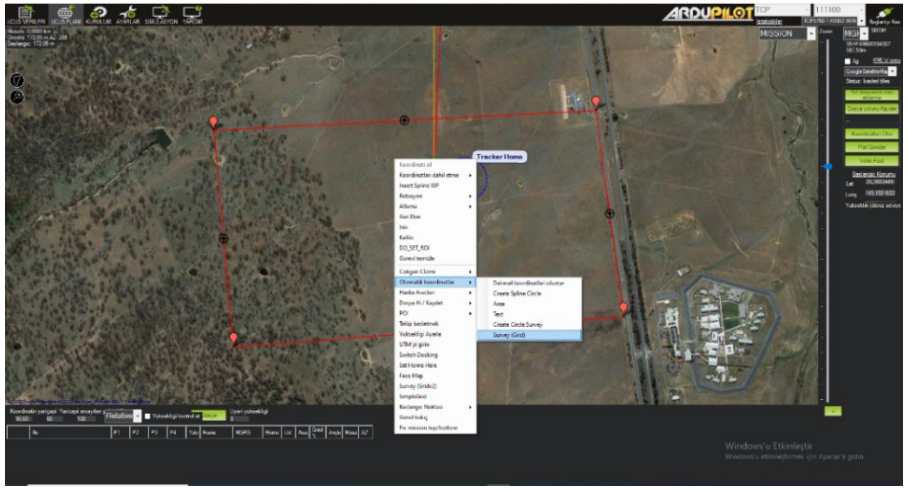
GCS

Strong
Innovative
Future Technology

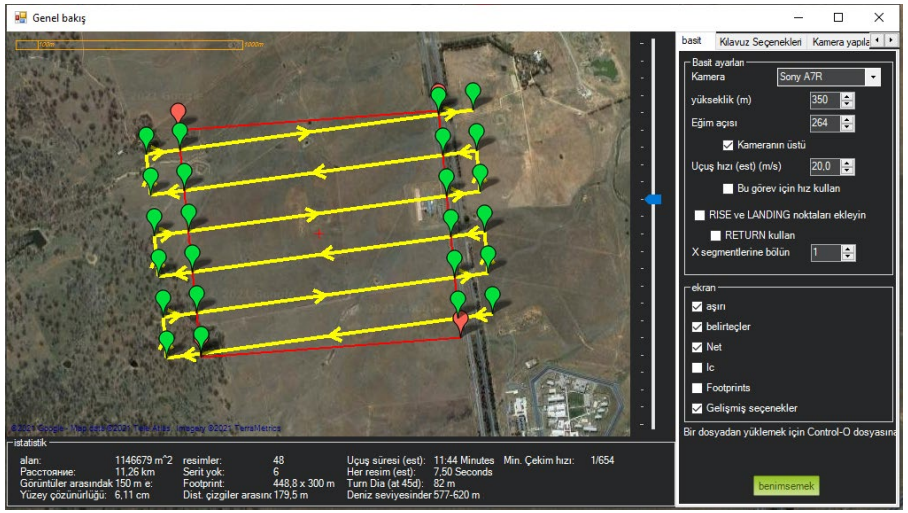
GROUND CONTROL STATION & SOFTWARE

“Mission Planner” User Interface on the Windows-Based





Flight Planning



Data Link Video and Telemetry Transmission with Antenna Sys. (For BOZKUŞ-GÖKTUĞ)

GENERAL FEATURES:

1. Transmit power: 2W-10W
2. Working frequency:1.4GHZ / 2.4GHZ
3. Broadband transmission:10MHZ
4. Modulation:OFDM
5. Downlink throughput: 2Mbps ~ 12Mbps
6. Power consumption: 6.8W(ground end), 9.5W(air end)
7. Size: 82.4*53.6*25.8mm
8. Weight: 160g(ground end), 112g(air end)
9. Working voltage:12V
10. Communication link establishment/recovery time is less than 10ms
11. Reliable communication and strong anti-interference ability
12. Excellent electromagnetic compatibility, no interference to GPS, pod and gimbal
13. Transmission distances: 50KM
14. With 1 1080P60 SDI HD image, 4 digital transmission, 2 remote control interface
15. 1 independent PWM channel output on the airborne end, can be used for signal control such as drop and lighting
16. The ground side adopts software decoding, and the decoding software has local storage and forwarding functions
17. Optimized transmission of 1080P high-definition video stream with minimum end-to-end delay of 250ms
18. Can realize point-to-point, point-to-multipoint, relay networking applications
19. Cold start time 5 seconds.

With Autotracking Antenna System, the range can be more 10-100 km

NOTE:Antenna Sys. Can be used for BOZKUŞ-2, GÖKTUĞ-2 and GÖKTUĞ-3

Data Link Video and Telemetry Transmission with Antenna Sys. (For BOZKUŞ-GÖKTUĞ)

With Autotracking Antenna System, the range can be more 10-100 km

Category	Item	Detail
Tracking Performance	Maximum Horizontal Rotation Speed	300 Degree Per Second
	Maximum Pitch Rotation Speed	60 Degree Per Second
	Maximum Horizontal Rotation Angle	Unlimited
	Maximum Pitch Rotation Angle	-15 ~ +135 Degree
	Horizontal Tracking Error	<0.5˚
	Pitch Tracking Error	<0.1˚
	Maximum Pitch Torque	300N.m
	Power Range	11~16V Dc
	Average Power Consumption	<20w
	Communication Range	50 Km
Antenna Specifications	Frequency	2,4-5 GHz. (customizable)
	Gain	9.0±1
	swR	≤1.8
	Polarization Mode	Vertical
	Half Lobe Width	65˚±5˚
	Size	260*260*40mm
	Operating Humidity	10%~95%
	Color	White
	Material	ABS
Interface	Power	*1, XT60,
	Antenna Interface	*1, SMA, WIFI antenna *2, SMA, video transmission antenna
	LCD	*1,
	Ethernet	*1, RJ45
	Button	*2

NOTE:Antenna Sys. Can be used for BOZKUŞ-2, GÖKTUĞ-2 and GÖKTUĞ-3

Data Link Video and Telemetry Transmission with Antenna Sys. (For AYBARS)

Weight (g)
2W :315
5W-10W :870
Dimensions (cm)
2W :8.2 x 6.1 x 3.6
5W-10W :12.1 x 7.6 x 8
Frequency
2W :S Band
5W-10W :L Band, S Band
RF Output Power
2 W / 5 W / 10 W
Data Rate
Up to 10 Mbps
Modulation
2W :CPFSK / PSK
5W-10W :CPFSK / MSK / PSK
ECCM (Optional)
FHSS / DSSS
FEC
2W :Reed Solomon (RS) and Convolutional
5W-10W :Reed Solomon (RS) and Convolutional LDPC (0)

Data Encryption
AES 256, Frequency Hopping
Data Interfaces
Ethernet, RS 422/485, RS 232
Power Consumption
2W :< 15W
5W-10W :< 70 W (10 W Output)
Video Encoding
5W-10W :H 264 (SD and HD 1080p60)
Environmental Tests
MIL-STD-810G
EMI / EMC
MIL-STD-461F

Data Link Ground & Air Module

With Autotracking Antenna System, the range can be more 100-200 km

Secured Video Sharing via GSM-LTE Module

4G NETWORK

Internet Supported Live Broadcasting Feature (Optional)

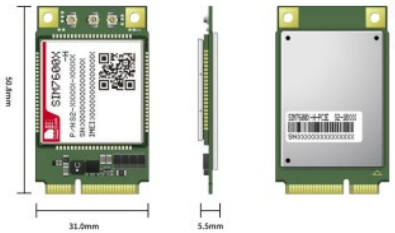
Snapshots from VTOL or Drone can be viewed on the ground station by the video pilot, sent to the remote platform via internet or network, and can be viewed and recorded simultaneously on the platforms.

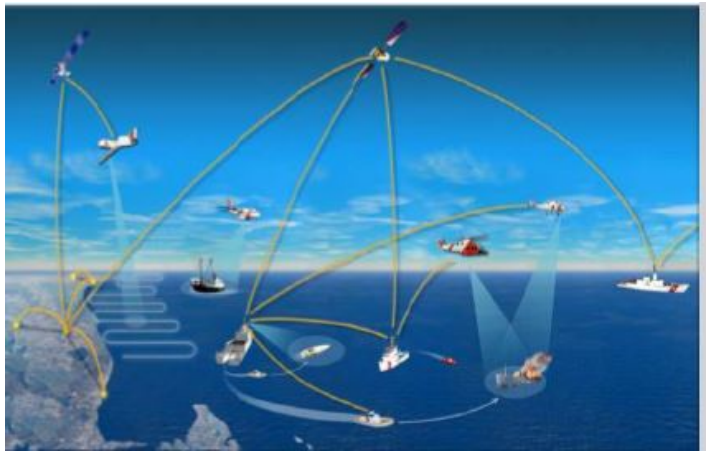
Product Description

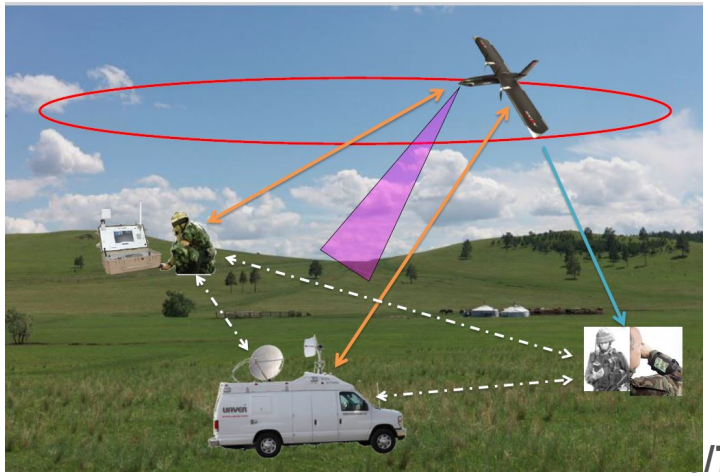
The SIM7600-H-PCIE series is the LTE Cat 4 module which supports wireless communication modes of LTE-TDD/LTE-FDD/HSPA+/GSM/GPRS/EDGE etc. It supports maximum 150Mbps downlink rate and 50Mbps uplink rate.

The SIM7600-H-PCIE series adopts mini PCIE form factor and consists of a SIM7600-H series module and a mini PCIE adapter board. It is easy for customers to integrate.

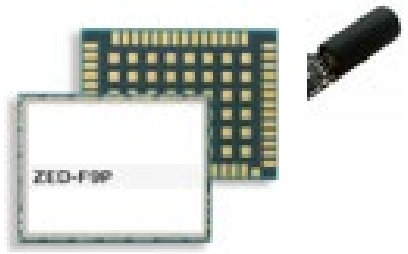
The SIM7600-H-PCIE series integrates multiple satellite high accuracy positioning GNSS systems, with multiple built-in network protocols, supports drivers for main operation systems (USB driver for Windows, Linux and Android etc.) and software function, AT commands are compatible with SIM7500/SIM7600 series modules. Meanwhile the SIM7600-H-PCIE series integrates main industrial standard interfaces, with powerful expansibility, including abundant interfaces such as UART, USB, GPIO, which is suitable for main IoT applications such as telematics, surveillance devices, CPE, industrial routers, and remote diagnostics etc.







L1-L2 Dual GNSS with Antenna



Multi-band receiver delivers centimeter-level accuracy in seconds

- Concurrent reception of GPS, GLONASS, Galileo and BeiDou
- Multi-band RTK with fast convergence times and reliable performance
- Centimeter-level accuracy in a small and energy-efficient module
- Easy integration of RTK for fast time-to-market
- Open SSR formats including SPARTN and Compact SSR for efficient delivery
- Special BMS Anti Jamming Application

Interfaces	
Serial interfaces	2 UART 1 SPI 1 USB 1 DDC (I2C compliant)
Digital I/O	Configurable timepulse EXTINT input for wakeup RTK fix status GEOFENCE status
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM v. 3.3, SPARTN v. 2.0

Features		
Receiver type	184-channel u-blox F9 engine GPS L1C/A L2C, GLO L1OF L2OF, GAL E1B/C E5b, BDS B1I B2I, QZSS L1C/A L1S L2C, SBAS L1C/A	
Nav. update rate	RTK	up to 20 Hz[1]
Position accuracy[2]	RTK	0.01 m + 1 ppm CEP
Convergence time[2]	RTK	< 10 sec
Acquisition	Cold starts Aided starts Reacquisition	24 s 2 s 2 s
Sensitivity	Tracking & Nav. Cold starts Hot starts Reacquisition	-167 dBm -148 dBm -157 dBm -160 dBm
Assistance	AssistNow Online OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
RTC crystal	Built-in	
Anti-jamming	Active CW detection and removal Onboard band pass filter	
Anti-spoofing	Advanced anti-spoofing algorithms	
Memory	Flash	
Moving base	For attitude sensing and heading applications	
Supported antennas	Active	

1 The highest navigation rate can limit the number of supported constellations
2 Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry

Anti-Jam GNSS CRPA System 8 Ant.

Internal GNSS Receiver;
BeiDou (B1C), Galileo (E1,E5a),
SBAS GLONASS (L1,L2),
GPS (L1,L2), QZSS (L1

Simultaneous Active Bands
GPS L1, GPS L2
GLONASS G1, GLONASS G2
GALILEO E1
BEIDOU B1C SBAS

Nominal Wideband Suppression
>50 dB

Internal GNSS Tracking Sensitivity
-164 dBm

The system eliminates interference by applying novel beamforming techniques. With an
8-array CRPA antenna, the system can assure the normal operation of GNSS receiver in
presence of multiple jamming sources.

MODE S ADS-B Transponder

General Features:

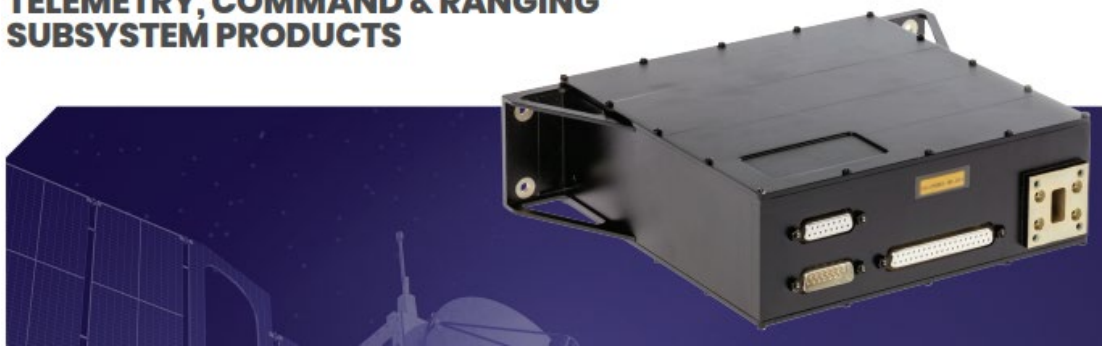
1. Mode S transponder
2. ADS-B 1090ES DF17 transmitter
3. Integrated SBAS GPS
4. Integrated static pressure sensor
5. Meets the minimum performance requirements of
6. the following RTCA specifications:
7. DO-181E Class 1, Level 2els @20W
8. DO-260B Class B1S @20W
9. GPS/SBAS augmentation system. Receiver
10. Autonomous Integrity Monitoring (RAIM) layer for
11. Fault Detection and Exclusion (FDE)
12. Temperature controlled static pressure sensor
13. accurate to 60,000ft.
14. Battery backed GPS for fast Time-to-First-Fix (TTFF)
15. DO-160G environmental Cat B2
16. Directly connects to PixHawk TELEM interface.
17. GDL90 compatible CONTROL serial input.
18. Compatible with popular autopilots.
19. GDL90 ownship and altitude packets
20. SMA 1030/1090MHz Antenna Connector
21. Integrated GPS antenna

Specification	Value
Input Power	11-28V 1W Ave On/Alt. 0.5W Standby
Size	50x25x17mm
Weight	20grams
SIL/SDA	1/1
Operating Temp	-45 to 80°C
Transponder	
MTL 1030MHz Dynamic Range	-61dBm -59 to 0dBm
1090 Transmit Power	20W Nominal
WAAS GPS	
Augmentation	SBAS
Sensitivity	-167dBm
Altimeter	
Range	-1000 to 60,000ft
Interfaces	
Control	
Control	57600bps GDL90, MavLink
Ownship	57600bps GDL90, MavLink
Programming	
Programming	115200bps GDL90
Options	
Wi-Fi Programmer Adapter	
1030/1090MHz Transponder Antenna	

Secured Video Sharing via Satellite Module

SATELLITE TELECOMMAND RECEIVER

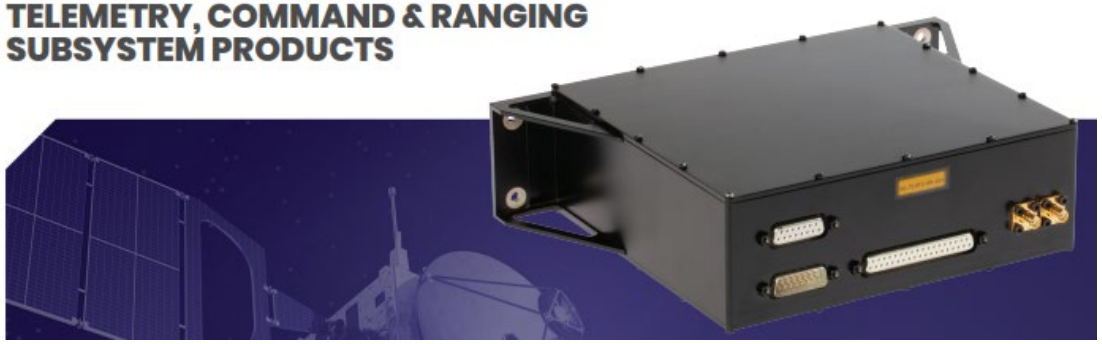
TELEMETRY, COMMAND & RANGING SUBSYSTEM PRODUCTS



SPECIFICATION	KU-BAND SATELLITE TELECOMMAND RECEIVER	NOTES
Operating Frequency Range	13.5 to 14.0 GHz	
Frequency Agility Range	250 MHz	with 100 kHz steps
Subcarrier Frequency	8 - 16 KHz	In - flight configurable
Input Power Range	-112/-60 dBm	
Modulation	PCM/BPSK/FM	Options available upon request
Data Rate	Up to 4,000 bps	500, 1,000, 2,000 or 4,000 bps available
Bit Error Rate	< 10^{-7} @1,000 bps (@-112 dBm)	
Ranging Delay Variation	100 ns - pp	
Data Interface	CAN-SU, RS-422	Options available upon request
Power Consumption	< 17 W	
Mass	< 1.9 Kg	
Dimensions	235 x 180 x 60 mm	

SATELLITE TELEMETRY TRANSMITTER

TELEMETRY, COMMAND & RANGING SUBSYSTEM PRODUCTS



SPECIFICATION	KU-BAND SATELLITE TELEMETRY TRANSMITTER	NOTES
Operating Frequency Range	11.1 - 11.8 GHz	
Frequency Stability	±2 ppm	
Frequency Agility Range	250 MHz	with 100 kHz steps
Output Power	-30 dBm secondary: >5dBm	Simultaneous RF outputs Different output power options upon request
Spurious & Harmonic Outputs	-50 dBc	
Modulation	PM	
Data Rate	Up to 8,192 kbps	
Ranging Delay Variation	100 ns - pp	
Data Interface	CAN-SU, RS-422	Options available upon request
Power Consumption	< 17 W	
Mass	< 1.9 Kg	

Product Description:

• In-orbit frequency agility up to 250 MHz, • Standard PCM/BPSK/FM demodulation, • Cost effective and state-of-the-art design using latest qualified components,

• Vertical mounting for dense system layout, • Low non-recurring engineering costs with the help of frequency agility, • CAN-SU data protocol

• Compatible with major platforms' electrical and mechanical interfaces, • Electromagnetic compatibility per MIL-STD-461F

Strong
Innovative
Future Technology

180MG Dual Sensor 90x Zoom and Thermal 640X512 Pixel & 15.000 Laser Range Finder

EXCEPTIONAL IMAGING PERFORMANCE
2160p QFHD video at 30 fps with full processing

IMPROVED MWIR PERFORMANCE
15x continuous optical zoom MWIR with 1.5° nFOV

NON-ITAR
For maximum exportability

ENVIRONMENTALLY PROTECTED
Fully sealed, dry gas filled structure

DIRECT DRIVE STABILIZATION
Ruggedized brushless motors with specialized bearings

MOST POWERFUL IN CLASS ONBOARD PROCESSOR
With Onboard Target tracking, Scene steering & Moving Target Indicator

INTEGRATED HIGH PRECISION GPS/INS
Providing platform location, target location and slant range

METADATA
MISB compliant video stream with KLV metadata

RELIABLE OPERATION
Mature design proven in demanding environments

ARTILLERY FIRE ADJUSTMENT
Integrated software for artillery fire correction

SUPER RUGGED DESIGN
Advanced Magnesium structure (no 3D printed parts used)

90X Dual Sensor Camera & Laser Range Finder

NOTE:180MG Can be used for only AYBARS-1

THERMAL IMAGER	
Sensor type	640 x 512, MWIR (cooled)
Wavelength	3-5 µm staring array
Sensitivity	<25mK
FOVs	26.3°- 2.0° (h) x 21.7° - 1.6° (v)
Zoom ratio	15x optical (+4x digital)
Lens	18 - 275 mm, F5.5
COLOR ZOOM CAMERA	
Sensor type	CMOS
Resolution	3840×2160px
FOVs	70.2° - 4.1° (h) x 43.1° - 2.3° (v)
Super resolution zoom	30x (90x with 480p)
Digital zoom	4x

LASER RANGE FINDER	
Max. range	Up to 15.0km (static applications), up to 10.0km (dynamic appl.)
Accuracy	Better than 1.5m
Classification	Class I (eyesafe)
LASER POINTER	
Power	50mW
Wavelength	830nm
Classification	Class IIIb
INTERNAL NAVIGATION SYSTEM	
IMU and GPS	Fully integrated, tightly coupled for Geo Pointing and real time Target GEO location
Accuracy	0.3° RMS heading / 0.1° RMS roll/pitch
Navigation data computing frequency	400Hz
System support	MGRS and decimal degree system support
Additional Options	Moving Map Software

Strong
Innovative
Future Technology

180MG Dual Sensor 90x Zoom and Thermal 640X512 Pixel & 15.000 Laser Range Finder

SYSTEM PERFORMANCE	
System type	3 axis mechanical stabilization / 3 axis electronical stabilization
Az. Coverage	360°
El. Coverage	-80° to +10°
Encoder resolution	0.01°
Stabilization bandwidth	100 Hz
Gyro noise	6 uRad
Stabilization	<50 uRad RMS
Motors	Direct drive
SYSTEM INTERFACES	
Digital Video	Ethernet
Control	RS232 / Ethernet
Interface connector	15 pin high density Dsub IP67
GPS antenna connector	SMA
ENVIRONMENTAL	
Rating	IP64 [sealed and dry gas filled structure]
Operating temperature	-40°C to 55°C
POWER REQUIREMENTS	
Voltage	22-26 VDC
Consumption	40W typical / 160W peak

90X Dual Sensor Camera &
Laser Range Finder

DIMENSIONS, WEIGHT & MOUNTING	
Size	180 mm x 227 mm (7.1" x 8.9")
Weight	E180: 3.75 kg (8.2 lbs) / E180MG: 3.25 kg (7.16 lbs)
Mounting	Nose or belly mount compatible

OTHER FEATURES	
• Automatic object tracking (onboard)	• Adjustable bitrate and resolution
• Moving Target Indicator (onboard)	• DHCP or static IP addressing
• Onboard video recording (32Gb)	• Unicast and Multicast video stream
• Onboard h.265 and h.264 encoder	• Field upgradable firmware
• Electronic video enhancement	• Sky Up functionality

IR SENSOR DRI ACCORDING TO JOHNSONS CRITERIA		
	Human target [1,7x0,5m]	NATO target [2,3x2,3m]
Detection	8600m	12400m
Recognition	2900m	7000m
Identification	1400m	3500m

Strong
Innovative
Future Technology

Dual Sensor 67x Zoom and Thermal 640X512 Pixel & 5.000 Laser Range Finder

90X Dual Sensor Camera & Laser Range Finder

VTOL / Fixed Wings UAV Models & Technical Capability Chart

Model	V2500-E (BOZKUŞ-2)	V3500-E (GÖKTUĞ-3)	V3800-H (AYBARS-1)	V3900-H (AYBARS-2)
Takeoff	VTOL	VTOL	VTOL	VTOL
Wing Span	2.5 m	3,5 m	3,8 m	3,9 m
Body Lenght	1.26 m	1.9 m	2.5 m	2.2 m
Maximum Takeoff Weight	13 Kg	30 Kg	50 Kg	35 Kg
Payload	1,5 Kg (Camera+Gimbal)	5 Kg Camera+Gimbal)	Max. 10-15 Kg	Max. 5 Kg
Propulsion System	5XBrushless DC Motor	5XBrushless DC Motor	1X100 cc EFI Gasoline Engine+ 5X Brushless DC Engine	1X60 cc EFI Gasoline Engine+ 5X Brushless DC Engine
Stall Speed	16 m/sec..	23 m/sec.	21 m/sec.	21 m/sec.
Material	Composite	Composite	Composite	Composite
Operational Range	50 Km	100 Km	25-150 Km	25-150 Km
Data Link Range	25-30 Km (Optional)	50-100 Km (Optional)		
Flight Time (with Camera Payload)	120 min/with 1.5kg 150 min/with 1.2kg Payload	240 min/1.5kg, Payload 180 mim/3 kg Payload 120 min/5 Kg Payload	240 min./10 kg Payload, 360 min./6 kg Payload,	360 min./5 kg Payload, 480 min./2 kg Payload,
Operational Speed	65km/h	65 Km / h	80 km/h	80 km/h
Maximum Speed	108 km/h	108 Km / h	130 km/h	130 km/h
Wind Resistance	45 Km / h	45 Km / h	40 Km / h	43 Km / h
Altitude	MSL 10.000 ft	MSL 12.000 ft	MSL 12.000 ft	MSL 12.000 ft
Camera	Dual Sensor 30x Zoom and Thermal 640X512 pixel & 3.000 LRF	Dual Sensor 67x Zoom and Thermal 640X512 pixel & 5.000 LRF	Dual Sensor 67x Zoom and Thermal 640X512 pixel & 5.000 LRF	Dual Sensor 67x Zoom and Thermal 640X512 pixel & 5.000-10.000 LRF
GCS	Dual Touch Screen Windows İ7 GCS	Dual Touch Screen Windows İ7 GCS	Dual Touch Screen Windows İ7 GCS	Dual Touch Screen Windows İ7 GCS
Antenna System	2 W Antenna Tracker with Panel Antenna	10 W Antenna Tracker with Panel Antenne	10+ W Antenna Tracker with Panel Antenne	10+ W Antenna Tracker with Panel Antenne

VTOL / Fixed Wings UAV Models & Additional Capability Chart

	Model	V2500-E (BOZKUŞ-2)	V3500-E (GÖKTUĞ-3)	V3800-H (AYBARS-1)	V3800-H (AYBARS-2)
Payload Cameras:	1.Dual Sensor 35 mm Thermal Lens & 3km LRF Cam.Sys.	X	X		
	2. Dual Sensor 50 mm Thermal Lens & 5 km LRF Cam.Sys.		X	X	X
	3. Dual Sensor 50 m Thermal Lens & 10 km LRF Cam.Sys.			X	X
Ground Control Station	Dual Touch Screen. i7 Windows	X	X	X	X
Data Link:	1. 1.4 GHZ and 2.4 GHZ	X	X		
	2. 2.4 GHZ and 5.8 GHZ			X	X
Antenna Tracker System	1. Panel Antenna	X	X		
	2. Bowl Antenna			X	X
L1-L2 Dual GNSS with Antenna	Multi-band receiver	X	X		
Anti-Jam GNSS	CRPA System 8 Ant.		X	X	X
MODE S ADS-B Transponder	ADS-B 1090ES DF17 Transmitter			X	X
GSM-LTE Module	Data Video Sharing via GSM-LTE	X	X	X	X
Satellite Communiation Module	It will be selected according to the satellite.			X	X
Sense&Avoid, Collision Avoidance Module (100 m)	That prevents collisions with artificial/ natural obstacles		X	X	X

General Purpose of Fixed Wing UAVs Use

A. Military Purposes;

1. Company-Battalion-Brigade - Division level, reconnaissance and surveillance,
2. Reconnaissance, surveillance and control on the border line, detection of border violations,
3. Identifying and tracking targets by flying under the Cloud, determining their coordinates, transferring them to response units,
4. Detection, tracking and coordination of military units at the enemy or operational level posing a threat in a wide area,
5. Gathering more detailed info about the enemy situation and area during the operation,
6. Manual or autonomous patrol duties,
7. Providing remote security to the Coast Guard and Navy,
8. Identifying and mapping areas contaminated with chemicals,
9. Monitoring and control of the border line under the Cloud,
10. To conduct reconnaissance and surveillance in a wider area for a longer period of time,
11. Like any other military use.

General Purpose of Fixed Wing UAVs Use

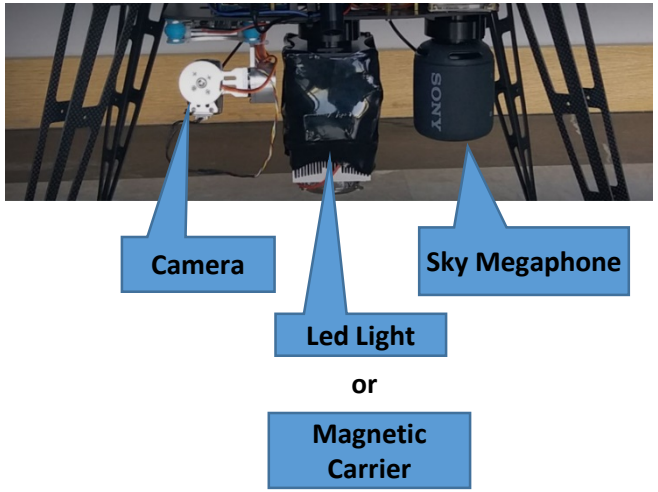
B. Construction and Engineering Purposes;

1. Monitoring, control and measurement of mining sites, forests,
2. Detection and measurement of irrigated and non-irrigated farmlands,
3. Detection of diseased plants and marking of diseased areas on the map,
4. Aerial control of disaster areas and damage assessment,
5. Monitoring, control and security of oil pipelines,
6. Monitoring, control and security of critical civilian areas such as factories, petrochemical plants, granaries, rivers and reservoirs,
7. aerial monitoring and traffic control,
8. City planning, 3D terrain modeling, orthophoto mapping and mapping,
9. search and rescue missions,
10. Determination of environmental pollution.
11. City planning, 3D terrain modelling, orthophoto mapping and mapping,
12. Aerial control of disaster areas and damage assessment,
13. Determination of coastal boundaries and marine pollution,
14. Monitoring, monitoring and damage detection of energy transmission lines.

Patrol Mode Multicopter

AEROGARD KUZGUN – X6 Patrol Technical Specifications		
L.Nu	**Talent Subject**	**Description-1**
1	**System Components**	- Platform (Quadcopter-Technical Specification) - Payload (Camera, Led lighting, Speaker, Carrier device)
2	**Power / Supply Reinforcement**	Reinforcement with lithium basis battery
3	**Maximum Altitude**	3500 m
4	**Performance Average Mission Altitude**	2-200 m (light and sound start to disperse after 200 m)
5	**Average Continuous Term of Office**	- 45 minutes with camera only - 30 minutes on trilogy configuration duty(depending on payload)
6	**Camera Optic Zoom**	10x zoom, optional 18x / 30x zoom
7	**Thermal Camera**	640x512 pixel, (9 / 25 / 30) Hertz
8	**Average Flight and Radius of Mission**	5 Km (on the line of vision)
9	**Target / Object Tracking**	Available
10	**Target / Object Coordinate Determination**	Available, 3000 m (Manual)
11	**Data and Telemetry Transfer (on the line of vision)**	5-8 km
12	**Data , Telemetry and Flight Control (beyond the line of vision)**	Over the 10 km with 4.5/5G - LTE
13	**Situation of image recording and processing**	- Record to ground station and camera real time - Facial Recognition, License Plate Reading
14	**Usage on Jammer Setting**	Unaffected, Auto return home.(working on it)

Bomb Destruction and Patrol Drone



AEROGARD
UAV SOLUTIONS

Multi-Rotor UAV Common Features

* **Multi-Rotor UAV AEROGARD KUZGUN - X6 & GEZGİN – X4**

General Specifications :

- ✓ Max. Payload : 1-2 kg
- ✓ Average 45 min. Flight Time
- ✓ Aluminium + Composite Material
- ✓ Aerodynamic Design
- ✓ Approximate Weight 4-6 kg.
- ✓ Ground Station or Tablet with 10 ’Display
- ✓ Gimbal 30X, 36X, 40X (Optional)
- ✓ Thermal Camera **640 Pixel**
- ✓ The photos taken by the UAV can be shown on the Google Earth with coordinates. Targets are determined with coordinates in these photos.

KUZGUN

GEZGİN

10 ”Screen Tablet Ground Control Station

15.6 ” Touch Screen Ground Control Station Rugged Bag

Multipurpose KORGAN X8 DRONE

* KORGAN Multi Rotor UAV (X8) 10-15 Kg Payload:

General Specifications :

- ✓ Maximum Payload : 10-15 kg
- ✓ Maximum Takeoff Weight : 45 kg
- ✓ Average 45-60 minutes Flight Time
- ✓ Ability to leave the load 10 km forward
- ✓ Octocopter, 8 units of brushless motors
- ✓ Engine to Engine arm length 120 cm
- ✓ Minimum 28 ‘’ Propollers
- ✓ Ground Control Stations (Options)
  15.6 ’ Touch screen **PC** or
  Tablet PC 10 ‘’ Screen or
  16 channel, 10 km range **Remote Control**,
- ✓ Gimbal **10X/30X Zoom camera OR Dual Sensor (Day and Night)** (Options)
- ✓ **Full HD or** 4K **Camera** (Options)

10 Km Range Control and Image Monitoring System

- **Reconnaissance and Surveillance,**
- **Cargo Transport,**
- **Weapon Integration**

Strong
Innovative
Future Technology

Cable Controlled Drone System (CCDS) Configuration (ERKİN T-100 Tethered Drone)

Parachute

Drone Platform

Zoom/Thermal Camera

Generator

Video Operator Console

Ground Control Station

Mobile Data-Power Station

220 V/AC

UPS - Emergency Landing Support

Şebeke

AEROGARD UAV SOLUTIONS

ERKİN T-100 Tethered Drone

Cable Controlled Drone System (CCDS) Technical Spects

1. **Model and Type:** Rotary Wing Drone System
2. **Total Weight** : 11,6 kg
3. **Cable Weight** : 2 kg
4. **Wind Resistance Speed:** 36 km/h
5. **Maximum Working Time:** 4-6 Hours (with Standard Single Aerial Platform)
   24 Hours (with Dual Aerial Platform)
6. **Power and Data Transfer System:** Data and Power over Fiber
7. **Mission Altitude:** 100 meters
8. **Positioning System:** GNSS(GPS, GLONASS, BeiDou, Galileo)
9. **Operating Temperature:** -10°C ~ 50°C
10. **Dimensions** : 120x120x60
11. **Propeller** : 20x6 inch (Carbonfiber)
12. **Flight Controller:** Open Source, Original development
13. **Safety Battery** : 2x 6S 6200 mAhLi-Po Battery
14. **Flight Time with Safety Battery:** 5-8 minutes
15. **Zoom Camera** : 30x Optical Zoom
16. **Thermal Camera:** 50mm Lens, 640*480 pixels

General Purpose of Multi-Rotor UAVs Use

1. **Military Purposes;**

- Tactical level (Team, Company / Battalion and Regiment) military units, reconnaissance, surveillance, target detection and tracking tasks,

- Close security, point and narrow zone reconnaissance missions in military and police stations, border stations,

- Manual or autonomous patrol duties along the border line in border units,

- Destruction of handmade explosives, without risking staff,

- In the Coast Guard and the Navy; close safety and search and rescue missions, airborne life vest and audible alerts, night search and rescue activities,

- Duty to interfere in suspicious situations grenades, explosive or rocket dropping missions in airborne.

General Purpose of Multi-Rotor UAVs Use

2. Civil and Engineering Purposes;

- Monitoring, control and measurement of point and narrow zone mining sites,
- Determination and measurement of irrigated agricultural areas,
- Detection of diseased plants and marking diseased areas on the map,
- Airborne spraying of identified diseased agricultural areas,
- Airborne control and damage detection of disaster areas,
- Monitoring, control and security of oil pipelines,
- Ensuring close safety of civil critical areas such as factories, petrochemical plants, granaries, rivers and reservoirs,
- Detection and monitoring of migrant smuggling and trafficking,
- Search and rescue missions,
- Determination of environmental pollution.

Assult UAV Models

BORAN-M ASSULT DRONE

BORAN-T DRONE

BORAN-R ASSULT DRONE

H-3800 AYBARS
VTOL Mini Kamikaze Drone Carrier UAV

BORAN-M Assault Drone with 60 & 81/82 mm (Short Type)

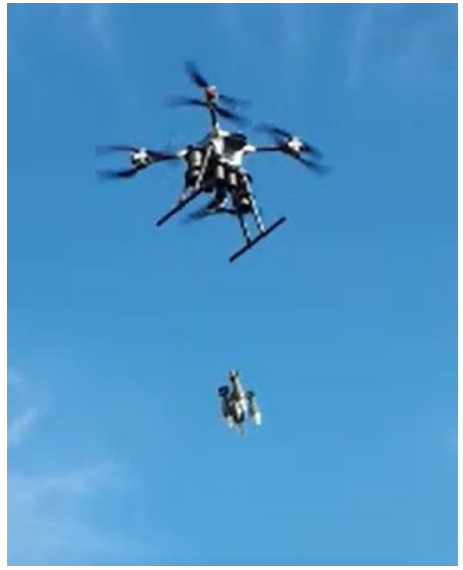
BORAN –M General Features :

- It is designed as an OCTOCOPTER, **payload up to 10 kg, 20 knot wind resistance**.
- Body dimensions are **90x90x70 cm**. It is made of composite material. It shows a light and durable performance.
- Propulsion sys. **8x DC electric engine and 22-24 inch propellers**.
- **Autonomous** and **manual** flight and the ability to go to the target.
- The maximum take-off weight is **22 kilograms**,
- **As ammo payload, 4X60 mm or 2x81/82 mm (Short Type) Mortar Ammo.**
- **Cameras Payload**, Day Camera or Thermal Camera or Dual Sensor (Day+Thermal Camera with Laser Range Finder) can be integrated.
- Data Link Range of **10 Km**, an Operational Range of **5 Km**,
- Flight Time of 30 Min. and uses a **2X22.000 mAh battery**.
- Its operational speed is 36 km/h. The maximum speed it can reach is 40 km/h.

BORAN-M Assault Drone with 60 & 81/82 mm (Short Type)

BORAN V1:4X60 mm Mortar Ammo Payload

One by One or
Quad Release



BORAN V1: 2X81/82 mm Short Type Mortar Ammo Payload

BORAN-M Assault Drone with 60 & 81/82 mm (Short Type)

BORAN V2: 4X81/82 mm Short Type Mortar Ammo Payload

BORAN V2: 8X60 mm Mortar Ammo Payload

BORAN-M Assault Drone
60 MM & 81 MM MKE UAV (DRONE) MORTAR AMMUNITION

60 mm & 81 mm NATO
UAV Mortar Ammunition

General features:

* The complete round consists of a composite body with steel balls, a point-detonating UAV füze and is threaded internally at the nose to accept the fuze and at the base to accept the fin assembly. The body is loaded with a high explosive.

* On target, UAV leaves the projectile. The projectile is fin stabilized in flight. The point detonating fuze functions on impact, detonating the fuze booster charge and, in turn, the high explosive main charge. The high explosive charge shatters the projectile body, producing near optimum fragmentation and blast effect at the target.

* The safety of the bullet is ensured by two separate safety pins.

BORAN-M Assault Drone
60 MM MKE MOD 129 UAV (DRONE) MORTAR AMMUNITION

60 mm NATO UAV Mortar Ammunition

60 mm MKE MOD129 UAV Ammunition Technical Details		
Complete Round Weight	:	~ 835 g
Complete Round Length	:	245 mm
Filler	:	Comp B
Filler Weight	:	~160 g
Body Material	:	Composite
Fragment Amount	:	min 480 pcs
Fuze	:	MKE MOD 128 UAV Mortar Ammuniton Fuze
Weapon Used	:	UAV

BORAN-M Assault Drone
81 MM MKE MOD 132 UAV (DRONE) MORTAR AMMUNITION

81 mm NATO UAV Mortar Ammunition

81 mm MKE MOD 132 UAV Ammunition Technical Details		
Complete Round Weight	:	~ 1900 g
Complete Round Length	:	337 mm
Filler	:	Comp B
Filler Weight	:	~550 g
Body Material	:	Composite
Fragment Amount	:	1296 pcs
Fuze	:	MKE MOD 128 UAV Mortar Ammuniton Fuze
Weapon Used	:	UAV

BORAN-M Assault Drone
MKE MOD 128 UAV (DRONE) AMMUNITION FUZE

MKE MOD 128 UAV Ammunition Fuze Technical Specifications	
Type	Drone Fuze
Fuze Functioning	Super-Quick (PD SQ)
Arming Time	~1 second
UAV Safe Seperation	Minimum 6 meters
Storage Temperature Range	-54°C / +71°C
Operating Temperature Range	-46°C / +63°C
Booster	13 gr RDX or Tetryl
Length	74,6 mm (MAX)
Threads	1,5"-12 UNF-1A
Diameter	49 mm
Shelf-Life	10 Years
Fuze Safety	1- Transportation Safety Wire 2- Drone Connecting Ring

BORAN-M Assault Drone
MKE MOD 128 UAV (DRONE) AMMUNITION FUZE

Fuze General Abilities:

- ✓ Suitable for **60 mm and 81 mm** NATO Mortar Ammunition
- ✓ MKE MOD 128 Fuze has particularly been developed to answer the needs of UAV integrated ammunitions.
- ✓ The MKE MOD128 Fuze has the security feature provided by two separate pins that make it **MIL-STD-1316** compliant. It has successfully passed environmental tests according to **MIL-STD-331**.
- ✓ The first pin is pulled manually after the projectile is loaded onto the drone and before takeoff. When the second pin goes to the target area of the drone, it is pulled with the signal given over the GCS just before releasing it, then the projectile is released from the drone.
- ✓ MOD 128 Fuze, ammunition remains safe up to 6 meters upon leaving the UAV (Drone) system

BORAN-M Assault Drone 81/82 mm Mortar Ammo Long Type

81/82 mm Mortar Ammo Long Type

Technical specifications

Total Weight	: 4820-5200 gr.
Total Length	: 500 mm
Weight of TNT Explosive	: 800 gr
Type	: Destructıon (HE)
Fuze	: AZDM 111 A2 or K510
Lethal Radius	: 30 m

Descrırptıon:

Normal Use Launch from a Mortar, Drop from a Drone with precision Fuze,

BORAN-T, 38/40 mm, 8-Tube Smoke Grenade Tear Gas Launcher

- ✓ Autonomous and Manual Flight
- ✓ Ground Control Station and Weapon Operator Consul,
- ✓ Anti-terrorism and anti-riot
- ✓ Tactical cooperation
- ✓ Stability maintenance weapon
- ✓ Counter-terrorism / combat / cover /
- ✓ Evacuation / marking / signal

- ✓ Body Type : Octocopter
- ✓ Average Flight Controller: 90x90, Height 70 cm
- ✓ Maximum Take Off : 24 Kg.
- ✓ Autonomous Flight Controller: Open Source
- ✓ Cruise Speed : 36 Km/h
- ✓ Control Diameter :10 Km
- ✓ Flight Time :30 Min.
- ✓ Working Temperature :-10, +55 C
- ✓ Ground Station : 7" FHD high-brightness touch screen, Android operating system

BORAN-T Smoke Grenade Tear Gas Launcher Specification

38/40 mm Launcher

Transmitter

Overall dimension	: 220 mm x 135 mm x 260 mm
Outer packing box	: 473 mm x 348 mm x 185 mm
Net weight	: 3.85 Kg.
Material	: POM racing steel, aviation aluminum, carbon fiber,
Diameter	: 38 mm – 40 mm
Loading capacity	: 8 pcs
Control mode	: Independent remote control of PWM signal
Control distance	: 7-8 Km.
Camera: active pixels	: PAL.976 (H)494 (V): NTSC;:768 (H) “494 (M)

Remote control:

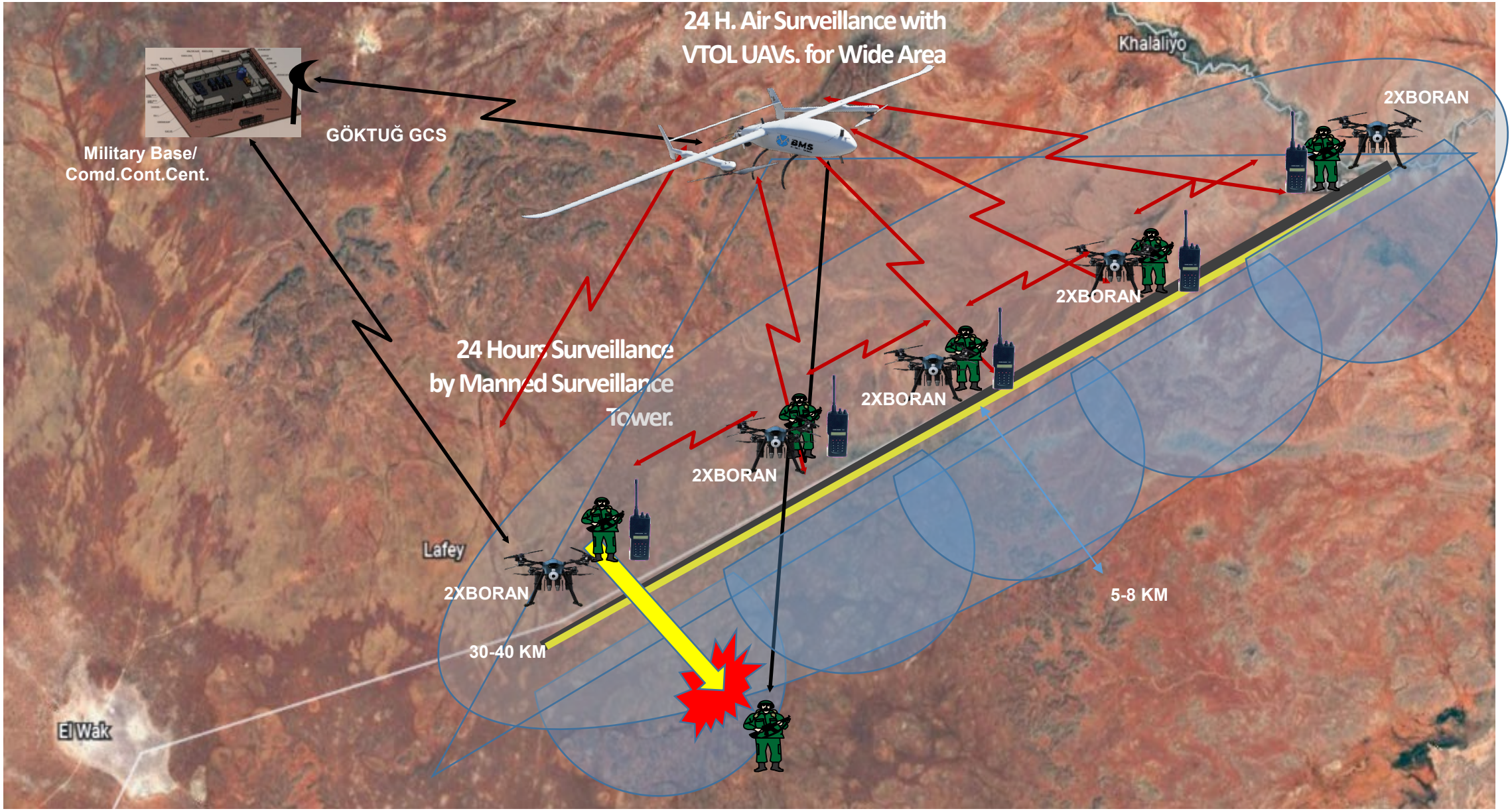
Weight	: 392 gram
Input the power supply	: 6V 1.5AA*4
Data output	: PS2 interface PPM
Frequency range	: 2.4055-2.475GHZ
Band width	: 500KHZ
Display mode	: STN semi-transparent positive display,128×64 dot

array VA73*39 mm LED white backlight

BORAN-T Tear Gas Cartridge, 37-40 mm

	Product	Agent	Core (a)	Exhaust	Emission Time	Range	Colour	Weapon Comp	Height-Weight
CS Tear Gas	CS Gas Projectile (37/40mm)	CS (%21-30)	Single	2 Parts	25 ± 5 sec	80-140 m	White	All 37&40mm Launchers	110mm-190gr
	CS Gas Projectile (37/40mm)	CS (%21-30)	3	2 Parts	25 ± 5 sec	75-120 m	White	All 37&40mm Launchers	120mm-215gr
	CS Gas Projectile (37/40mm)	CS (%21-30)	5	2 Parts	25 ± 5 sec	75-120 m	White	All 37&40mm Launchers	148mm-240gr
	CS Gas Projectile (40mm)	CS (%21-30)	Single	2 Parts	25 ± 5 sec	80-140 m	White	All 40mm Launchers	110mm-190gr
	CS Gas Projectile (40mm)	CS (%21-30)	3	2 Parts	25 ± 5 sec	75-120 m	White	All 40mm Launchers	120mm-215gr
	CS Gas Projectile (40mm)	CS (%21-30)	5	2 Parts	25 ± 5 sec	75-120 m	White	All 40mm Launchers	148mm-240gr
Smoke	CS Gas Projectile (37/40mm)	-	Single	2 Parts	3*5 ± 5 sec	75-140 m	White Yellow Purple Red Green Blue	All 37&40mm Launchers	110mm-190gr
	CS Gas Projectile (37/40mm)	-	Single	2 Parts	3*5 ± 5 sec	75-140 m	White Yellow Purple Red Green Blue	All 37&40mm Launchers	110mm-190gr
Flashbag	**Product**	**Effect**	**Core (s)**	**Sound Output**	**Light Output**	**Range**	**Weapon Comp.**	**Height**	**Weight**
	Aerial Flashbang	Sound and Bright Flash	Single	165-175dB Average	5 Million Candela	90-120 m	All 37/40mm Launchers	90mm	110gr

GÖKTUĞ AND BORAN TOGETHER OPERATION USE CONCEPT



VTOL UAV AND BORAN TOGETHER OPERATION USE CONCEPT

1. VTOL UAV searches for possible targets by making a patrol and surveillance flight in an area within a 30-50 km radius of threat, high risk or need to be kept under control.
2. VTOL UAV Configuration includes two Aerial Platforms, one GCS, one set of data-link and one set of Antenna Tracker. There is a dual sensor (day + night) camera and Range Finder as the main camera and a Thermal camera with 50 mm Thermal Lens as the secondary camera. Aerial Platform and Camera are planned as redundant in order not to interrupt the mission and to perform the mission 24 hours a day if needed.
3. All flight activity is monitored in real time via VTOL's Ground Control Station (GCS). The general regions or actual coordinates of the detected target/targets are detected.
4. Detected target coordinates are determined by the Decision-Making Commander, which BORAN stays in the intervention zone.
5. Whichever BORAN will be tasked, the target coordinates are transferred to the GCS of that BARAN. The transferred target coordinates are uploaded to BORAN as Mission Planning. BORAN, which is loaded with the task, starts its mission flight after all pre-flight checks are done.
6. In BORAN, the mission priority is to be sent to the target area autonomously, if necessary, small corrections can be made on the target by switching to manual flight mode.
7. Recommended Release Altitude should be between 200 m-600 m depending on the nature of the threat/target.
8. While the camera is on the target, when the camera is looked at 90 degrees and the "+" sign of the camera and the target are seen over the GCS, the Mortar Munitions are released individually or collectively, and the enemy/terrorist is destroyed by being under fire.
9. After the task is completed, the autonomous return home command is given and BORAN's safe return home is followed.

BORAN-R Assult Drone (Rocket Launching)

BORAN –R General Features :

- It is designed as an OCTOCOPTER, **payload up to 10 kg, 20 knot wind resistance**.
- Body dimensions are **90x90x70 cm**. It is made of composite material. It shows a light and durable performance.
- Propulsion sys. **8x DC electric engine and 22-24 inch propellers**.
- **Autonomous** and **manual** flight and the ability to go to the target.
- The maximum take-off weight is **22 kilograms**,
- **As ammo payload, 6X40 mm Rocket**
- **Cameras Payload**, Day Camera or Thermal Camera or Dual Sensor (Day+Thermal Camera) can be integrated.
- Data Link Range of **10 Km**, an Operational Range of **5 Km**,
- Flight Time of 30 Min. and uses a **2X22.000 mAh battery**.
- Its operational speed is 36 km/h. The maximum speed it can reach is 40 km/h.

BORAN-R Assult Drone (Rocket Launching)

Rocket Launch Pod:

- 6 X40 mm Rocket Pod
- 2 Axis Gimbal,
- Target Camera,
- Gimbal + Pod Aluminum Material,
- Single or multiple Electronic ignition,

- Target Detection, Tracking and Coordinate Acquisition Software

BORAN-R Assult Drone (Rocket Launching)

30X, 640X480 THERMAL & LASER RANGE FINDER

Camera General Features;

Day Camera Spec	
SONY 1/2.8" "Exmor R" CMOS	SONY 1/2.8" "Exmor R" CMOS
Full HD 1080 (1920*1080)	Full HD 1080 (1920*1080)
2.13MP	2.13MP
30x, F=4.3~129mm	30x, F=4.3~129mm
12x (360x with optical zoom)	12x (360x with optical zoom)
10mm(wide end) to 1200mm(tele end). Default 300mm	10mm(wide end) to 1200mm(tele end). Default 300mm
Object Tracking	50 Hz., Min.Obj.Size. 32*32
Thermal imager spec	
Lens	35mm
Horizontal FOV	17.7°
Vertical FOV	13.3°
Diagonal FOV	22°
Detective Distance (Man: 1.8x0.5m)	1029 meters
Recognize Distance (Man: 1.8x0.5m)	257 meters
Verified Distance (Man: 1.8x0.5m)	129 meters
Detective Distance (Car: 4.2x1.8m)	3157 meters
Recognize Distance (Car: 4.2x1.8m)	789 meters

Laser Rangefinder	
Laser Wavelengths	1550 nm
Measure ability	3000m (Typical value 1: · Object size: the target surface is larger than the laser spot area · Reflectivity: 60% , Accuracy rate: 90%
Vehicle target measuring	2300m (Typical value 2: · Object size: 2.3*2.3 m · Emissivity: 30% , Others same as Typcial value 1)

40 mm Rocket System

- 6 X 40 mm Rocket,
- Particle-effect high-explosive warhead ,
- Composite material,
- Lenght: 600 mm,
- Effective radius; Ground: 15 m, Air: 30 m,
- Effective range: 100-800 m,
- Deviation Measure : up to 3-5 m for 800 m
- Max range: 1200 m,
- Rocket weight: 500 gr.,
- Rocket specialty: 7500 m / sn pbx 40 gr.,
- 700 pcs 4,5 mm steel ball,
- Pre-flight setup, timed electronic.

BORAN2-G 40X53 mm Grenade Launcher Assult Drone

BORAN –G General Features :

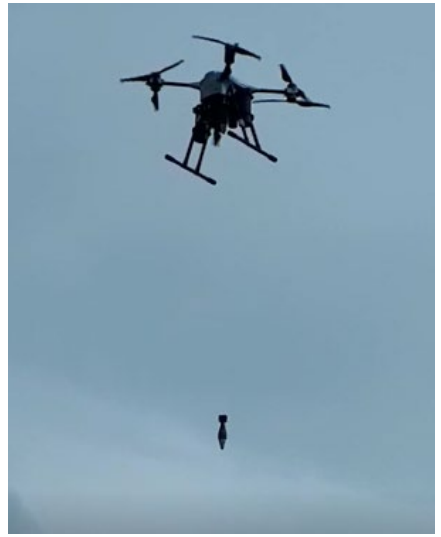
- It is designed as an OCTOCOPTER, **payload up to 15 kg, 20 knot wind resistance**.
- Body dimensions are **120x120x70 cm**. It is made of composite material. It shows a light and durable performance.
- Propulsion sys. **8x DC electric engine and 26 inch propellers**.
- **Autonomous** and **manual** flight and the ability to go to the target.
- The maximum take-off weight is **45 kilograms**,
- **As ammo payload, 6X40X53 mm Grenade**
- **Cameras Payload**, Day Camera or Thermal Camera or Dual Sensor (Day+Thermal Camera) can be integrated.
- Data Link Range of **10 Km**, an Operational Range of **8-10 Km**,
- Flight Time of 30 Min. and uses a **4X30.000 mAh battery**.
- Its operational speed is 36 km/h. The maximum speed it can reach is 40 km/h.

BORAN’s GROUND CONTROL STATION

GROUND CONTROL STATİON

GCS General Features;

- 1080P Digital Video Transmission + Data Transmission + Telemetry all in one datalink together GCS
- 7" FHD high-brightness touch screen with a resolution of 1920*1200, Max. brightness can reach 1800nit, it can use in full sunlight
- Android operating system.
- RJ45 network, Type-C USB and OTG interface
- 5-10 km Range for Video & Telemetry Transmission
- 8-10 hours working hours with 2 hours of chargings
- Dust-free and waterproof in the fuselage, control switches, and various peripheral interfaces,
- Autonomous navigation to the given target coordinate (Guidance Mode),
- Autonomous navigation to a selected coordinate on the map,
- Single and multiple shot options,
- Ability to take real-time target and flight images.



BORAN-M Assault Drone with 60 & 81/82 mm (Short Type)

POSSİBLE CAMERA TYPES

Day Camera+Thermal Camera + LRF

3 Axis Gimbal, 30X Zoom, 1920X1080 P Day Cam., 640X480 Pixel Thermal & 2.000 m Laser Range Fınder, ± 360° (Horizontal) / ± 170° (Vertical)

Day Camera+Thermal Camera

3 Axis Gimbal, 30X Zoom, 1920X1080 P Day Cam., 640X480 Pixel Thermal,

± 360° (Horizontal) / ± 170° (Vertical)

Day Camera

3 Axis Gimbal, 30X Zoom, 1080P, 25 Frames / 1080p, 60 Frames, 1920x1080 Day Cam.

± 360° (Horizontal) / ± 170° (Vertical)

Thermal Camera 3 Axis Gimbal, 50 MM Lens, 640 X 480 Pixel,

± 360° (Horizontal) / ± 170° (Vertical)

Assult H-3800 AYBARS

ON GOİNG PROJECT

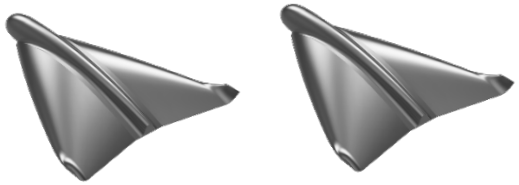
VTOL Mini Kamikaze Drone Carrier UAV

VTOL Technical Spect

- Body length : 2.5m
- Wingspan : 3.8m
- Maximum takeoff weight: :50kg
- Maximum payload : 15kg
- Life time: 2h-15kg payload, 4h-10kg payload
- Flying radius: 200-400km (depending on the amount of oil)
- Ground station control (depending on the distance of the digital transmission): 20-100 km
- Maximum speed: 130km/h
- Cruising speed: 100-120km/h
- Maximum oil load: 12L
- Lift limit: 4000m
- Maximum wind resistance: 12m/s (6 wind)
- Use environment:-10 °C +45 °C; anti-light rain

Assult H-3800 AYBARS

VTOL Mini Kamikaze Drone Carrier UAV



2X6 Kg

Mini Kamikaze Technical Spect

- 2/4 Mini Kamikaze Drones (depending on weight) are placed under the carrier UAV wing,
- The target is destroyed by GPS locking from the air,
- Approaching the target area 2-3 km.
- Three types of destruction heads (Anti Personnel, Armored Search, Building Concrete Shelter) can be used depending on the type of target.
- Hit target deviation rate 2-3 m depending on the quality of the GPS Signal,
- Detonation at a specified altitude over the target,
- Explosive selection flexibility,
- Electronic ignition,

Strong
Innovative
Future Technology

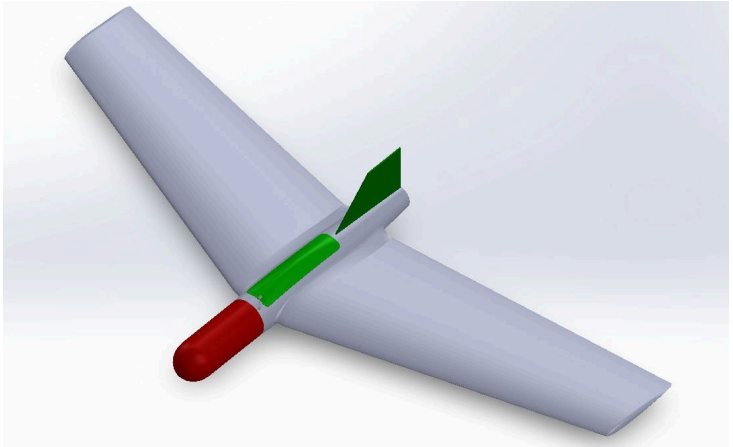
SENCER-1 2200 K KAZİKAZE UAV

Model	SENCER-1 2200 K
Takeoff	Catapult
Material	Composite
Wing Span	2.2 m Delta Wing
Body Lenght	1.20 m
Maximum Takeoff Weight	9 Kg
Payload (Explosive)	2 Kg
Propulsion System-Battery	1xBrushless DC Motor
Max. Operational Range	80-100
Range /Data Link	30-50 Km (Optional)
Flight Time	60 min/ 2 kg,
Operational Speed	120 Km / h
Maximum Speed	140 Km / h
Altitude	MSL 6.000 ft
Ground Control Station	Dual Screen Windows GCS
Camera	Mini HD Camera

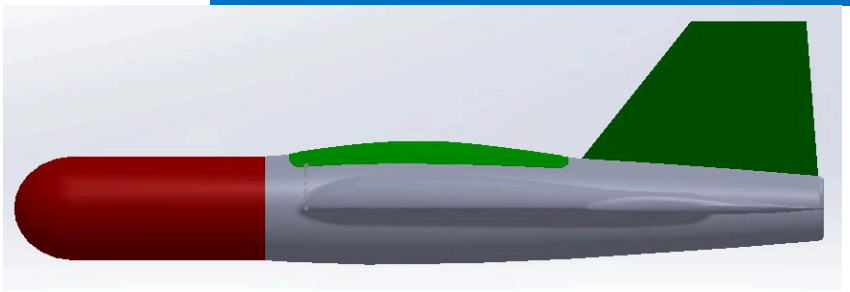
Payload/Camera

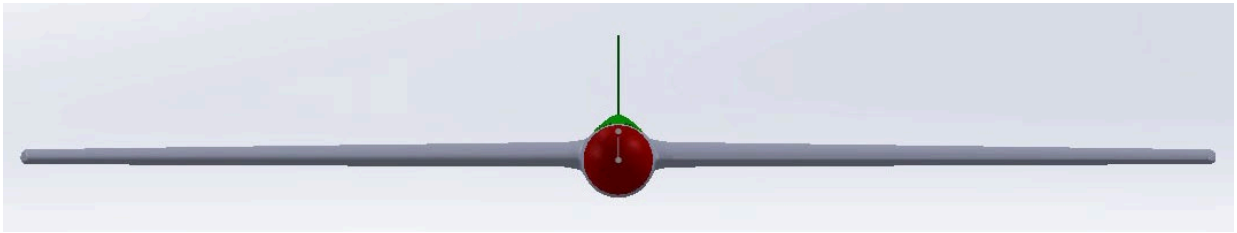
Ground Control Station

Automatic Antenna Sys.



SENCER Kamikaze Assault Drone





Usage Concept

	Target Types to Use	Descriptions
SENCER Assault UAV A-2200	Against targets that require rapid intervention and are likely to relocate, Assassination against enemy top commanders and managers. Critical Headquarters and Command Centers behind enemy contact lines, In the destruction of refueling points, oil production areas and oil pipelines, Enemy fire support weapons and positions, Enemy air defense and radar positions. Airports and critical logistics distribution points located in the enemy rear area.	Effective against operative and strategic level targets behind the line of contact.

Strong
Innovative
Future Technology

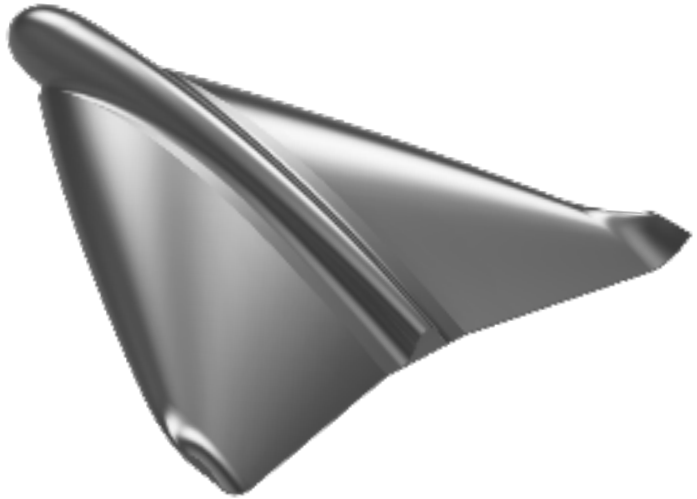
SENCER-1 2200 K KAZİKAZE UAV

Model	ŞAHİN-1 K
Takeoff	Catapult+Release
Material	Composite
Wing Span	1 m Delta Wing
Body Lenght	1.20 m
Maximum Takeoff Weight	6 Kg
Payload (Explosive)	3 Kg
Propulsion System-Battery	1xBrushless DC Motor
Max. Operational Range	05-100 Km
Range /Data Link	30-50 Km (Optional)
Flight Time	60 min/ 3 kg,
Operational Speed	120 Km / h
Maximum Speed	140 Km / h
Altitude	MSL 6.000 ft
Ground Control Station	Dual Screen Windows GCS
Camera	Mini HD Camera

Payload/Camera

Ground Control Station

Automatic Antenna Sys.



4 References

- Undersecretariat for Defence Industries (90 Sys. Rotary Wings (R/W))
- National Intelligence Service (3 Sys. R/W)
- Ministry of Customs and Trade (3 Sys. R/W)
- Ministry of Envoriment and Urbanization (3 Sys. VTOL, 2 Sys. R/W)
- Balıkesir Municipality (1 Sys. VTOL)
- Aksaray Special Provincial Administration (1 Sys. VTOL)
- Turkish General Directorate of Forestry (2 Sys. VTOL)
- Republic of Yemen (3 Sys. VTOL, 7 Sys. R/W Assult BORAN)
- Republic of Uzbekistan (1 Sys. R/W Assult BORAN)
- Governorship of Tokat Provincial Disaster and Emergency Directorate
- Governorship of Artvin Provincial Gendarmerie Command
- Governorship of Nevşehir Provincial Disaster and Emergency Directorate
- Governorship of Gaziantep Provincial Security Directorate
- The General Directorate of İstanbul Water and Sewerage Administration
- Adapazarı Municipality Development Directorate / Illegal Housing
- Çorum Provincial Special Administration (Public Housing and Civil Works)
- The Regional Directorates of State Hydraulic Works : Regions of Erzurum
- Şanlıurfa Viranşehir District Police Department
- Mardin Dargeçit Gendarmerie Command
- Harran University – Faculty of Agriculture
- Konya Sugar (Torku)- Konya
- ENK Map Construction Estate – Antalya
- Utek Engineering – Ankara
- MTC Energy Company – Ankara
- Kale Mining Inc. – Canakkale
- Lacin Mapping Inc. – Ankara
- Geo Tech Group – Ankara / Saudi Arabia