To our Esteemed Customers, Partners, and Supporters:

It is with great pleasure that I present yet again a company portfolio that is robust and growing. We have witnessed in recent past unprecedented achievements in all areas from product development to company operations to customer delivery and service.

Baykar continues to deliver on its mission to produce the most robust, high-performance unmanned systems not only in Turkey but in the world. We have graduated from humble origins as a manufacturer of car parts in the late 1990s to now delivering industry-grade UAVs that are operational in the field of battle, with over 150,000 flight hours to boot. In addition to providing surveillance, our systems now deliver smart munitions that have made our systems a sine qua non in the theater of battle.

Our success is the product of a decade and a half of persistently applying the strongest values of industrial organization and product development. Our state-of-the-art facility in Istanbul integrates design, prototyping, and manufacturing under one roof. Our company culture, with its young engineering teams, places a high premium on combating hierarchies of position with hierarchies of knowledge and informed judgment. And our product development integrates multidisciplinary thinking to seamlessly bridge everything from sensor development to machine learning to platform integration.

We introduce our product portfolio in this catalog for the benefit of our customers. While product improvement is a never-ending enterprise, we are proud of every system and subsystem delivered - be it large like our TB2, or small like our sensor kits.

I want to take this opportunity to thank all team members of the Baykar family who have made our extraordinary journey possible.

Sincerely,

Haluk Bayraktar
CEO, Baykar
The defense industry is an essential component of the world economy and prime mover in the balance of power in today’s world. Defense spending has been on the rise due to countries attempting to counter the ascendance of other countries’ weapons technology. This competition has ushered in a technology arms race that, since the termination of the Cold War, has produced a number of new defense doctrines.

One such doctrine is the importance of “network-centric”, in contrast to “platform-centric” warfare, often considered the greatest military revolution of the past century. This doctrine stresses the importance of weaning defense off heavier industries in favor of complete control over information and network management. This shift has contributed to and benefited from strides in economics, trade, and information technology development. As new information-based economies and technologies have started to supplant older, heavier industry, unmanned systems in particular stand to be seen as a prime opportunity to wean countries off human-intensive operations on the battlefield. For our country in particular, the shift to unmanned aviation has provided a window of opportunity not only to bridge the gap between our capabilities and others in the world, but also to widen that gap to our advantage.

Our company draws inspiration from the leadership of technology visionaries from our Republic’s early years like Nuri Demirağ and Vecihi Hürkuş to build the most advanced technological systems on the global stage by advancing unmanned aerial systems. In line with their principles, we strive to ensure as independent, Turkey-centric a technology stack as possible. We further attempt to dovetail emerging high technology with mission-critical functions to offer our armed forces systems that are reliable, integrated, and complete.
AUTONOMOUS. HI-PERFORMANCE. END-TO-END.

UNMANNED AERIAL SYSTEMS (UAS)
BAYRAKTAR TB2 UAS

1. BAYRAKTAR TB2 AIR VEHICLE PLATFORM
2. GENERATOR - TRAILER
3. GROUND CONTROL STATION
4. GROUND DATA TERMINAL
5. REMOTE VIDEO TERMINAL
6. FORWARD BASE
INTEGRATED.
RELIABLE.
COMPLETE.

AIR PLATFORM (UAV)
The Bayraktar Tactical Unmanned Aerial System is a medium-altitude, long-endurance class UAS for reconnaissance operations. With its triple-redundant avionics systems and sensor fusion architecture, it has the capability of fully autonomous taxi, take off, cruise, landing.

<table>
<thead>
<tr>
<th>Technical Features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. Range</td>
<td>&lt;150 km</td>
</tr>
<tr>
<td>Cruise Speed</td>
<td>70-80 knots</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>150 knots (110 IAS)</td>
</tr>
<tr>
<td>Operational Altitude</td>
<td>22,500 ft</td>
</tr>
<tr>
<td>Absolute Ceiling</td>
<td>25,000 ft</td>
</tr>
<tr>
<td>Endurance</td>
<td>&lt;24 hrs</td>
</tr>
<tr>
<td>Wing Span</td>
<td>12 m</td>
</tr>
<tr>
<td>Length</td>
<td>6.5 m</td>
</tr>
<tr>
<td>Takeoff / Landing</td>
<td>Runway (Automatic)</td>
</tr>
<tr>
<td>Max Takeoff Weight</td>
<td>650 kg</td>
</tr>
<tr>
<td>Payload Capacity</td>
<td>&lt; 55 kg</td>
</tr>
<tr>
<td>Fuel Type</td>
<td>Mogas Avgas</td>
</tr>
<tr>
<td>Engine Type</td>
<td>100 hp Internal Combustion Engine</td>
</tr>
</tbody>
</table>

The Bayraktar Tactical Unmanned Aerial System is a medium-altitude, long-endurance class UAS for reconnaissance operations. With its triple-redundant avionics systems and sensor fusion architecture, it has the capability of fully autonomous taxi, take off, cruise, landing.

MORE THAN 60,000 FLIGHT HOURS EXPERIENCE

OPERATIONAL SINCE 2014 WITHIN THE TURKISH ARMED FORCES, GENDARMARIE AND TURKISH POLICE

NATIONAL ENDURANCE AND ALTITUDE RECORD FOR TURKISH AVIATION
The Armed Bayraktar Tactical Unmanned Aerial System is a medium-altitude, long-endurance-class UAS purposed for reconnaissance operations. With its triple-redundant avionics systems and sensor fusion architecture, it is capable of fully autonomous taxi, takeoff, cruise, and landing. The Armed Bayraktar is further capable of delivering up to 4 smart munitions and precise targeting is available by onboard laser designation. Bayraktar is an all-in-one solution with immediate see-and-hit capability to ensure no collateral damage.

**The Armed Bayraktar TB2 Provides Armed Reconnaissance, Persistent Airborne Surveillance, and Target Acquisition for the Turkish Armed Forces**

**The TB2 Can Carry Up To 4 Smart Munitions**

### Technical Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. Range</td>
<td>&lt; 150 km</td>
</tr>
<tr>
<td>Cruise Speed</td>
<td>70 knots</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>130 knots (90 IAS)</td>
</tr>
<tr>
<td>Operational Altitude</td>
<td>22,500 ft</td>
</tr>
<tr>
<td>Absolute Ceiling</td>
<td>25,000 ft</td>
</tr>
<tr>
<td>Endurance</td>
<td>&lt; 24 hrs</td>
</tr>
<tr>
<td>Wing Span</td>
<td>12 m</td>
</tr>
<tr>
<td>Length</td>
<td>6.5 m</td>
</tr>
<tr>
<td>Takeoff / Landing</td>
<td>Runway (Automatic)</td>
</tr>
<tr>
<td>Max. Takeoff Weight</td>
<td>650 kg</td>
</tr>
<tr>
<td>Payload Capacity</td>
<td>55 - 165 kg</td>
</tr>
<tr>
<td>Fuel Type</td>
<td>Mogas Avgas</td>
</tr>
<tr>
<td>Engine Type</td>
<td>100 hp Internal Combustion Engine (Injection Type, Variable Pitch Propeller)</td>
</tr>
</tbody>
</table>

### Technical Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EO Camera Module</td>
<td></td>
</tr>
<tr>
<td>IR Camera Module</td>
<td></td>
</tr>
<tr>
<td>Laser Designator</td>
<td></td>
</tr>
<tr>
<td>Laser Range Finder</td>
<td></td>
</tr>
<tr>
<td>Laser Pointer</td>
<td></td>
</tr>
</tbody>
</table>
The Bayraktar Mini Unmanned Aerial Vehicle System is an intelligent, field-proven robotic system for short-range reconnaissance applications. The system has been operational since 2007, after having first been deployed within the Turkish Armed Forces.

**Technical Features**

- **Comm. Range**: < 15 km
- **Cruise Speed**: 30 knots
- **Operational Altitude**: 2,000 ft
- **Absolute Ceiling**: 12,000 ft
- **Endurance**: 60 mins
- **Wing Span**: 2 m
- **Length**: 1.2 m
- **Takeoff**:
  - Hand Launch
- **Landing**:
  - Parachute / Belly Landing
- **Operational Temp Range**:
  - -20 °C...+55 °C
- **Power**:
  - Battery
  - Electric Motor
- **Payload**:
  - 2 Axis Day / Termal Camera
  - Frequency Hopping Spread Spectrum Digital...
- **Data Links**:
  - Automatic Waypoint Navigation
  - Secure Digital Communication
  - Home Return and Automatic Landing in Case of Lost Communication
  - Smart Battery Management System
  - Multi UAV Support
  - Remote-Range Command / Control And Monitor
  - Ground Control Switching
  - Automatic Takeoff / Automatic Cruise
  - Automatic Belly Landing / Parachute Deployment
  - Joystick Assisted Semi-Automatic Control
  - Stall Control in Case of Electric Motor Disfunction
  - Spin Control in Case of Very Harsh Wind Conditions

**More Than**

**100,000 Flight Hours Experience**

**Trained More Than**

**1,000 Operators**

**Operational Since 2007 Within**

**The Turkish Armed Forces**, Gendarmerie, Special Forces, Turkish Police and Qatar Armed Forces
WESCAM CMX 15D GIMBAL TURRET

Multi-Sensor Imaging/Lasing Payload Options

- HD thermal, HD daylight and HD low-light cameras
- Continuous wide-angle zoom
- High-magnification step-zoom spotter
- High-sensitivity color low-light imaging
- Compact, efficient, reliable laser target designator
- SWIR camera images designator spot

Sensors

- IR Sensor
- EO/IR Sensor
- EO Sensor
- Laser Designator
- Image Blending
- IR Image Processing

- HD MWIR, 6 FOV
- 8.6-154 mm continuous zoom lens with 2nd gen HD color & VGA low light TV
- 600/1000/1500 mm step zoom lens with 3rd gen HD color & (HD low light TV or VGA SWIR)
- 100 mJ device @ 1064 nm
- EO to IR
- 6th Gen • auto dead pixel removal • false color

High Performance Gimbal

- Line-of-sight Stabilization, Typically <5 μradians
- Stabilization and Steering (2) Axis Inner (pitch/yaw) (2) Axis Outer (azimuth/elevation)
- 4-axis stabilized turret with internal passive isolator for excellent stabilization performance
- Sharp optics and excellent stabilization performance results in industry leading target detection, recognition and identification range performance in the 15” class
- IMU mounted to optical bench for high target location accuracy
- INS auto-align to aircraft
- Full laser stabilization minimizes spot jitter

Advanced Image Processing

- Real-time image enhancement on all sensors
- Improved feature recognition and ID
- 2x, 4x Ezoom
- Advanced video tracker with automatic target detection
- Imaging blending
- Embedded Moving Target Indication (EMTI)

Simplified Aircraft Integration

- Electronics unit inside the turret
- Built-in vibration isolation
- Built-in GPS receiver
Baykar’s signal intelligence system BSI-101 is a high performance radio receiver that can be used for airborne monitoring and surveillance of the RF spectrum. Based on a software-defined radio architecture, BSI-101 can be customized to specific needs of ELINT and COMINT systems.

WITH ITS MINIMAL SWAP, BSI-101 IS WELL-SUITED FOR DEPLOYMENT ON UAVS AND REMOTELY CONTROLLED MOBILE GROUND VEHICLES.
IMPACTFUL. DIRECTED. PRECISE.

PAYLOAD SMART MUNITIONS
**ROKETSAN MAM-L**

- **Max. Range**: > 8 km (depending on launch altitude and platform velocity)
- **Min. Range**: < 2 km
- **Range Flight Time**: < 80 s
- **Accuracy**: < 3 m
- **Warhead Effectiveness and Targets**: Type VInsensitive Munition against bullet impact and fuel fire
  - **Anti Personnel**: Effective in >20 m diameter against personnel
  - **Anti Armor**: Battle Tanks, armored vehicles (>700 mm RHA armor penetration)
- **Guidance**: Inertial Midcourse Navigation + Semi Active Laser (STANAG 3733)
- **Weight**: 21.5 kg
- **Length**: 1000 mm
- **Diameter**: 160 mm

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**ROKETSAN MAM-C**

- **Max. Range**: > 8 km (depending on launch altitude and platform velocity)
- **Min. Range**: < 2 km
- **Range Flight Time**: < 80 s
- **Accuracy**: < 3 m
- **Warhead Effectiveness and Targets**: Type VInsensitive Munition against bullet impact and fuel fire
  - **Anti Personnel**: Effective in >20 m diameter against personnel
  - **Multi Purpose**: Armored vehicles (>200 mm), Anti-personnel (>10 m)
- **Guidance**: Inertial Midcourse Navigation + Semi Active Laser (STANAG 3733)
- **Weight**: 7 kg
- **Length**: 900 mm
- **Diameter**: 70 mm
ROBUST.
INDUSTRY-GRADE.
SAFE.

GROUND CONTROL STATIONS (GCS)
Baykar designs, develops, and manufactures Command and Control systems and sub-systems such as Shelters, Consoles, Rack Type Cabinets, Power Distribution Units(PDUs), Monitoring and Command Modules, Command and Control Software and User Interface Software.

**THE GROUND CONTROL STATION IS USED BY THE BAYRAKTAR TB2 TACTICAL UAV SYSTEM FOR THE TURKISH ARMED FORCES AND TURKISH POLICE**

### Interfaces
- Separate 220V AC Power Inputs for Generator and Electrical Network
- External 220V AC Power Output for Ground Data Terminal
- External 24V DC Power Input for Redundant Power Source for Critical Hardware
- C4I Interface
- Ethernet IO Ports
- Fiber Optic IO Ports
- Telephone Line IO Ports

### Features
- Satisfies NATO “6516/SHCPE/86-88” Standards
- ISO 7861-1976 Compatible Connectors
- STANAG 2530 Compatible Painting
- Compatible with EMI and EMC Requirements
- Redundant Power Architecture
- Redundant Pilot and Payload Operator Consoles
- Radio and Intercomm. Systems
- Air Conditioning and NBC Protection Systems
- Lightning Protection Systems
- Blackout Lamps
- Monitoring and Command Interface Modules
- Command and Control Embedded Software
- Command, Control and Monitoring Operator Interface Software

### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Temperature</td>
<td>-40 °C to +60 °C</td>
</tr>
<tr>
<td>Sizes</td>
<td>2,240 x 5,900 x 2,300 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>2150 kg</td>
</tr>
</tbody>
</table>
The Baykar Mobile Ground Control Station is used for operating Bayraktar TB2 platform far away from main control bases. Its powerful antennas allow Bayraktar TB2 to take off and land at its present location and increases its flight range.

The Mobile Ground Control Station consists of a Nato Ace III Shelter, a hydraulic antenna platform that can be adjusted up to 12m height, C-band and UHF antenna systems, and a powerful truck with hydraulic landing gears that brings mobility to all of these systems.

An indigenous design of Baykar, the Mobile Ground Control Station has a safe and quick installation by virtue of its sensors and control valves.

### Tower
- **Hydraulic Control**
- **Adjustable tower operation speed**
- **0-12m height**
- **Mechanical safety system**
- **300 kg weight carriage capacity**

### Vehicle
- **Total carriage capacity** 25 tons
- **Range** > 1000 km
- **Power** 330 PS (243 kW) @ 1900 d/d
- **Torque** 1300 Nm @ 1200-1700 d/d
- **Fuel Tank** 350 L (Aluminum)

### General Specifications
- **Temperature Range** -30 ºC...+55 ºC
- **Dimensions** 450 x 270 x 53 mm
- **Weight** 3.325 g (±0.0 g)
- **Supply Voltage Range** 13.5V : 30V DC
- **External Power Supply** 220V AC input, 20V DC output, 160W
- **Internal Battery Unit** 4S, Li-Po, 9Ah
- **Power Consumption**
  - <10 W (Nominal, only Mini GCS)
  - <25 W (Maximum, with Mini ATAS and PC)
- **Connections**
  - Mighty Mouse Series Circular Connector x4 (26 Pins x2, 10 pins x1, 6 pins x1)
  - Ethernet x2, RS232 x2, CAN x1
- **Communications**
  - Ethernet x2, RS232 x2, CAN x1

### Features
- **Ruggedized Composite Structure**
- **PC Locking**
- **System and ATAS Power Switches with Individual Covers**
- **Indicators for System, Internal, External and ATAS Power**
- **Flat Keyboard, Capable of Commanding the UAV by the Hardware without PC**
- **Flat Keyboard LED Indicators**
- **Individual Current Protection for ATAS, External Supply and Battery Supply**
- **Resettable Fuses**
- **Cap Protection for Circular Connectors**
- **Easy to Carry**
The Baykar Ground Support Unit (GSU) powers the Bayraktar TB2 platform on the ground, charges smart batteries, and provides maintenance via an operator interface. The GSU can charge batteries or the UAV for four hours without needing an external power source. When plugged in, it operates on a standard 220-230V AC source and has wheels for easy mobility.

**Technical Specifications**

- Operational Temp: -20 °C...+50 °C
- Storage Temp: -40 °C...+60 °C

**Interfaces**

- Uninterrupted 220V (2A) AC Socket
- Electrical Network powered 220V (10A) AC Socket
- Ethernet IO Port
- RS232 Serial Communication Port

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The Baykar refueling station is custom-made for the Bayraktar TB2 platform and comes with an 800 litre capacity in semi-trailer form factor. The station can both refuel and defuel the aircraft.

The station is powered by a 220-230V AC standard ground voltage supplied from the grid or a generator.

**Technical Specifications**

- Capacity: 800 L
- Dimensions: 1188 x 2252 x 1430 mm
- Construction: Semi-Trailer Type
- Working Temperature: -10 °C...+55 °C
- Fuel Pump Output Pressure: 172 Bar
- Refueling Flow Rate: 24 L/min
- Discharging Flow Rate: 17 L/min
- Valves: Electro-mechanic
# MINI MOBILE CHARGING STATION

The Mini Mobile Charging Unit is for charging and discharging batteries which are used in the Baykar Mini Unmanned Aerial Vehicle System.

This unit enables the charging and discharging of batteries used in the avionics, ground control station, and motor.

## Technical Specifications

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>-20 ºC to +55 ºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>5.130 g</td>
</tr>
<tr>
<td>Sizes</td>
<td>300 x 350 x 150 mm</td>
</tr>
<tr>
<td>Air Cooling</td>
<td>2 Internal Fan (Air Input Channel, Air Output Channel) The ability of driving automatic temperature controlled fan</td>
</tr>
<tr>
<td>External Cables</td>
<td>Cable that draws power from truck, Cable that draws power from regular source on the grid, Cable that connects the battery pack to the charging station</td>
</tr>
<tr>
<td>Error Notification</td>
<td>Inverse Polarity, Connection Loss, Short Circuit Error, Selection of Wrong Voltage, Low Input Voltage, High Input Voltage, Low Cell Voltage, High Cell Voltage, Cell Connection Error, High Temperature Error</td>
</tr>
</tbody>
</table>

## Electrical Specifications

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>180-264V AC Mains Voltage / 12V DC Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging current capacity</td>
<td>0.1 A to 10 A</td>
</tr>
<tr>
<td>Discharging current capacity</td>
<td>0.1 A to 7 A</td>
</tr>
<tr>
<td>Power Input Panel Components</td>
<td>Grid Power Connection Connector, Grid Power Connection Fuse, Grid / Storage Battery Power Source Picking Key, Mobile Charging Station On/Off Switch, Connector That Draws Power From Truck</td>
</tr>
<tr>
<td>Charge Specifications</td>
<td>Charge, Discharge, Balancing</td>
</tr>
<tr>
<td>Charge Capability</td>
<td>Up to 6 cells</td>
</tr>
<tr>
<td>Batteries Charged</td>
<td>Avionic System Battery, GCS Battery, Motor Battery</td>
</tr>
<tr>
<td>Internal Balancing Specification</td>
<td>Balancing Mode, Cell balancing during Charge/Discharge</td>
</tr>
</tbody>
</table>
READINESS BEFORE READINESS.

SIMULATOR SYSTEMS
The TB2 simulation system provides a training platform for operators and operator trainees with a realistic flight, payload and ammunition launch experience.

**Technical Features**

- Real Time Simulation
- Realistic Flight Dynamics
- Identical Flight Control for TB2 UAV System
- Pilot Console
- Gimbal Operator Console
- Trainer Console
- Air to Surface Missile Fire Scenario Training

**Technical Features**

- Gimbal Scenario Training
- Emergency Scenario Training
- Meteorological Simulation
- High Resolution Virtual Reality Platform
- Easy To Setup
- Easy To Use
- Ergonomic Design
A SINGLE PANE OF GLASS

C4I SYSTEMS
**OPERATOR INTERFACE**

The Baykar Operator Interface (BOI) provides real time control of the UAV and has screens to monitor data coming from the aircraft. Because of its modular structure, BOI is easy to use for a wide range of operators with different training levels.

- **Main functions of BOI can be listed as follows**
  - Commands and Controls the UAV
  - Monitors detailed Telemetry Data
  - Provides Mission Planning and Mapping functionality
  - Displays and Configures Camera views
  - Provides computer-generated graphics for various gauges and displays

- **Map module of the BOI has the following features**
  - Operator can form flight routes and send them to Autopilot of the UAV
  - Operator can display different kinds of map information such as raster map data, shape files and elevation models
  - Operator can display ground control stations and ground data terminals on map
  - Operator can create airports and also can draw taxi routes for UAV
  - Operator can draw different kind of areas such as friendly, fly-restricted etc.
  - Wide range of elements such as targets, location pins etc. can be added to map by operator

- **Main functions of Camera Module are listed below**
  - Display of various types of videos such as Tail Camera videos or Gimbal videos at Operator Interface
  - Recording of the displayed video
  - Instant switch between various videos and displaying two video at the same time
  - Various HUDs (Heads-Up Displays) for different type of missions
Baykar Live Video Streaming System (BLVSS) provides real-time media streaming and archive management solutions for the defense industry. BLVSS allows many authorized users to watch high-resolution video streaming in real-time with low latency. BLVSS consists of a web-based application that allows internal network clients to watch live streams, and a mobile application that allows secure streaming of live videos to tablets using mobile networks. Live stream videos are recorded in 30-minute-length archive videos. The Comments feature allows users to take notes related to the video streaming. Moreover, users can add tags along with notes and therefore evaluate archived videos with details. These notes can be exported and thus tasks can be scheduled. Archive files can be searched based on date or metadata.

For security of access to live streaming and archived videos, the system automatically uses temporary passwords. This makes access to the media server more secure. In addition, user name or device ID is watermarked on live streaming and archived videos. With the mobile solution that can be optionally integrated into the Live Video Streaming System, live streaming can also be watched on mobile devices with Windows platform. Live streams are securely transmitted from high-confidential networks to mobile devices using end-to-end encryption and unidirectional data transmission (aka diode).
Geographic Analysis System (GAS) software developed 100% nationally (fully native resources) by PiriReis Ltd. is a 3-dimensional (3D) virtual globe platform which enables displaying geospatial data compliant to international standards and analyzing them, on the intranet network of the Turkish Armed Forces.

By using the GAS-Unmanned Aerial Vehicle (UAV) Module, developed in cooperation with Baykar and PiriReis, analysis and queries related to UAVs are performed in the operation centers and ground control stations.

All operations needed to trace and manage UAVs on a 3D virtual globe and make use of the images taken from their camera are performed by using the GAS-UAV. In this way, situational awareness is increased, UAVs are used more effectively and planning and decision-making processes are supported.

**Main Operations Performed**

- Near-real-time instant tracking of multiple UAVs.
- Displaying UAV’s moving (instant) position and location, field-of-view, footprint, and trace in 3D environment.
- Getting UAV’s information (ID, title, flight altitude, angle, etc.).
- Viewing UAV’s trace data with its footprint.
- Automatic detection and displaying of addresses (city-county-district-street or place name) of UAV’s location and the target (center of camera view).
- Viewing meteorological conditions while tracking UAVs.
- Displaying video coming from UAV’s camera in a separate window.
- Taking a snapshot of a frame from the video and positioning this image on the true location.
- Instantaneous data interpretation and data compiling (target acquisition, intelligence data collection, digitizing, adding notes, etc.) from the images captured from video, with the support of other geospatial data loaded on the GAS.
- Storing snapshot images and trace data of the UAVs in the database, then querying these data and replaying/viewing the selected one.
- Setting flight route and preparing mission plan for UAVs.
- Checking overlapping routes.
- Giving a warning when one UAV comes close to another one or when one UAV comes close to the terrain in a dangerous way.
Central UAV Monitoring System (CMS) is a web-based tool that is used for displaying basic information of airborne UAVs on a single map to users. Thanks to the system, air traffic control, mission planning, antenna and frequency planning are made easy. CMS allows users to take a general look at all the flights. Location, orientation, remaining fuel, payload information, emergency situations, communication information (Ground Control Station - GCS, Ground Data Terminal - GDT) of the UAVs can be tracked. Additionally, it allows the users to help separation of the UAVs and shows altitude tables, proximity alerts, flight codes, UAV trails. Health status of the ground antennas can be tracked and line-of-sight information can be shown over the map. Permissions can be granted at different levels for users to restrict classified information. CMS is a very useful tool that reflects all the necessary information for the UAV operations with a central command.

**REMOTE VIDEO TERMINAL SYSTEM**

**General Specifications**

| Operating | -20 ºC...+55 ºC |
| Non-operating | -40 ºC...+55 ºC |

**Backpack Dimensions**

99 cm x 46 cm x 38 cm

**Antenna Tripod Dimensions**

91 cm < height < 183 cm

**Total Weight**

20 kg

**Electrical Specifications**

- **Voltage**: 24V with supplied battery pack or 28V DC
- **Current**: Up to 4.0 Amps
- **Power Consumption**: Max 100 W
- **Connector**: 2 x 50 OHM SMA Connectors and 55-pin Primary Connector
- **Ethernet Interface**: 205 cm/81 in

**Details**

- Rugged, portable antenna system enhances EnerLinks III range performance.
- Ideal for dismounted on-the-pause applications.
- Small omni antenna design provides 3dBi of gain.
- Wide beamwidth improves usability and allow ease in pointing.
- Upward-looking antenna for operation at close overhead range.
- Fully integrated with all EF components.
- The RVT can provide up to five hours of use per mission.
- The small, light patch antennas provide a wide beam width to allow easy acquisition and tracking.
- The RVT system can provide up to 30 km at 6 Mbps for transmission of high-quality HD video and other sensor data.
Baykar has available a rapid mapping service to provide orthorectified, color-corrected, high-resolution maps - not just photos - overnight. The service can cover hundreds to thousands of square kilometers in one day and deliver the ready-made map by the next day.

The Baykar system is built for rapid development and disassembly, with reliable camera technology. All cameras are commodity, off-the-shelf cameras and proven to sustain in excess of hundreds of thousands of shots without the need for replacement. While capture for each flight happens over several hours, the processing of images takes slightly more time and happens offline.

When cruising at TB2 speeds in excess of 200 km/h, this arrangement enables coverage of hundreds of square kilometers per hour, thus enabling entire provinces or even countries to be imaged in one day.

The system includes a web-based application that walks an operator through all phases of map generation, from the initial designation of the desired area and resolution, to final image stitching and imagery delivery.

**Example Coverage Patterns (presuming medium flight altitude of 15,000 feet)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Area (km²)</th>
<th>Example Coverage Time</th>
<th>Resolution (cm/pixel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco</td>
<td>130</td>
<td>10 Minutes</td>
<td>6</td>
</tr>
<tr>
<td>Greater Istanbul</td>
<td>4,000</td>
<td>4.5 Hours</td>
<td>6</td>
</tr>
<tr>
<td>Adana Fertile Region (Çukurova)</td>
<td>10,000</td>
<td>11 Hours</td>
<td>6</td>
</tr>
</tbody>
</table>
ISOLATED.
INTELLIGENT.
REDUNDANT.

SUBSYSTEMS - AVIONICS - FLIGHT CONTROL SYSTEMS
Flight control system (FCS) is the most crucial component of a UAV platform which must offer a safe degree of autonomy combining robust estimation, navigation and control capability. Above all, critical avionic systems have to be continuously monitored and possible failures must be diagnosed and isolated from the control cycle with immediacy. FCS, developed by Baykar as part of Turkey’s national UAV initiative, offers a state-of-the-art system which reduces the operator burden while maximizing safety and reliability. Its triple redundant configuration is the first application on a tactical grade UAV system. The estimation software included in the flight control system that supplies state information to the control cycles depends on modern algorithms based on stochastic sensor fusion. Navigation, control and guidance algorithms are capable of fully autonomous takeoff, landing, taxiing and waypoint navigation.

**EMERGENCY SITUATIONS DUE TO SUBSYSTEM MALFUNCTIONS ARE DETECTED BY A HEALTH-MONITORING SYSTEM AND SAFE RETURN TO THE BASE IS HANDLED BY THE AUTOPILOT, RETURNING THE AIRCRAFT ON A PREDEFINED ROUTE.**

### Specifications
- **Supply Voltage**: 18V – 29V DC
- **Power Consumption Max.**: 20 W
- **Operating Ambient Temperature**: -40 ºC.....+55 ºC
- **Weight**: 3.060 g

### Features
- **Triple Redundant Main Controller Unit**
- **Triple Redundant System Health Monitoring and Voting Unit**
- **Triple Redundant Power Regulating System**
- **Electrical Isolation Interface**: 15 RS232, 4 RS422/RS485 Full Duplex, 2 RS422/RS485 Half Duplex, 4 CANBUS Interface
- **EMI Protection**
- **ESD Protection**
- **Surge Protection**
- **Short Circuit Protection**
- **Reverse Voltage Protection**
- **MIL-DTL-38999 Type Circular Connectors**
- **Complies with VPX Standards (ANSI/VITA 46.0, 48.0, 48.1, 48.2)**
- **Lightweight Aluminum Casing**
- **Vibration Resistant**
- **Conductive Cooling**

**BUK-101 FLIGHT CONTROL COMPUTER**

[Image of a BUK-101 Flight Control Computer]
MISSION CONTROL COMPUTER

The Auxiliary Mission Computer controls the non-critical data flow on the aircraft and transfers data that can be required by the Flight Critical Mission Computer. Multiple communication input/output lanes provide monitor and control rate of connected avionics and ensures payload operation and realization of non-flight-critical functions without interfering with the main flight control system.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>Handling of Auxiliary Mission Functions with Safety Microprocessor</td>
</tr>
<tr>
<td>18 – 29V DC</td>
<td>Electrical Isolation Interface</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>RS232, 2 RS422/RS485 Full-Duplex, 2 RS422/RS485 Half-Duplex,</td>
</tr>
<tr>
<td>Max. 20 W</td>
<td>4 CANBUS Interface</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>High Voltage (Surge) Protection</td>
</tr>
<tr>
<td>-40 ºC...-55 ºC</td>
<td>Short Circuit Protection</td>
</tr>
<tr>
<td>Weight</td>
<td>Reverse Voltage Protection</td>
</tr>
<tr>
<td>1.8 kg</td>
<td>All Connectors Meets Requirements Specified in MIL-DTL-38999</td>
</tr>
<tr>
<td></td>
<td>Complies with VPX Standards (ANSI/VITA 46.0, 48.0, 48.1, 48.2)</td>
</tr>
<tr>
<td></td>
<td>Light Weight Aluminum Chassis</td>
</tr>
<tr>
<td></td>
<td>Vibration Resistant Design</td>
</tr>
<tr>
<td></td>
<td>Conduction Heat Transfer Structure</td>
</tr>
</tbody>
</table>

KM-301 MAGNETOMETER

KM-301 is a compact three-axis magnetometer and it can be used as a subsystem with heading output for navigation systems. Set-Reset capability improves accuracy by eliminating possible strong magnetic disturbances and self-thermal noise of the sensor.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>2 to ±2 Gauss</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 ºC...-60 ºC</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>18 - 28V DC</td>
</tr>
<tr>
<td>Interface</td>
<td>1 x Micro-D (9 pin)</td>
</tr>
<tr>
<td>Communication</td>
<td>1 x RS232</td>
</tr>
<tr>
<td></td>
<td>50 Hz Continuous Output</td>
</tr>
<tr>
<td></td>
<td>Hard and Soft Magnetic Calibration Adjustment</td>
</tr>
<tr>
<td></td>
<td>Mounting Adjustment using DCM</td>
</tr>
<tr>
<td></td>
<td>Diagnostic Output for Sensor and Communication Failures</td>
</tr>
</tbody>
</table>
**MINI AUTOPILOT UNIT**

This compact autopilot system consists of developed inertial, magnetic, and pressure sensors as well as a communication modem.

Using an advanced microcontroller with high processor power and advanced stochastic sensor fusion and navigation algorithms, it provides full automatic departure and landing as well as navigation in autonomous and semi-autonomous modes. It provides a controlling external input sensor and useful lines with the channels of RS232 and CAN.

### Specifications

- **Operating Temperature**: -60 °C.....+55 °C
- **Weight**: 158 g
- **Sizes**: 20 × 125 × 90 mm
- **Voltage**: Min. 9V DC  
  Nominal 12V DC  
  Max. 13.3V DC
- **Current**: Min. 150 mA  
  Max. 250 mA
- **Average Power Dissipation**: 2.8 W
- **3 Axis Angular Velocity Accelerometer**: Range of measuring ± 300 °/s  
  Resolution 0.01 °/s  
  Noise (RMS) 0.06 °/s
- **3 Axis Accelerometer**: Range of measuring ± 10 g  
  Resolution 0.313 mg  
  Noise (RMS) 1 mg
- **3 Axis Magnetometer**: Range of measuring ± 2 Gauss

### Features

- Safety microcontroller which has high processing power.
- Real Time Operating System.
- Stochastic state estimation algorithms.
- Developed navigation algorithms.
- Full and semi-autonomous flight modes.
- Automatic route point tracking.
- Automatic circle tracking.
- Full automatic landing and departure.
- Emergency monitor, automatic home return in case of emergency.
- Automatic landing with parachute or automatic landing on the body when communication loss occurs.
**BAS-201 BAYKAR IMU**

BAS-201 is a military grade inertial measurement unit (IMU) designed, developed, and manufactured by Baykar. It is used as the primary sensor in sensor fusion and stochastic filtering applications. It is a tactical grade, high-performance unit that provides accurate measurements. Its low size, weight, and power consumption make it a good choice especially for space constrained applications.

**IT IS A TACTICAL GRADE, HIGH PERFORMANCE UNIT THAT PROVIDES ACCURATE MEASUREMENTS.**

### Specifications

- **Performance**
  - Operating Temperature: -40 °C … +55 °C
  - Output Rate: 200 Hz
  - Weight: 255 g
- **Connector**
  - MIL STD 38999, Series 3 connector, 22 PIN
- **Gyro Specifications**
  - Range: ± 300 °/s
  - Random Walk: 1 °/√hr
  - Bias Instability: 5 °/√hr
  - Bias Over Temperature: ± 1 °/s
- **Accelerometer Specifications**
  - Range: ± 5 g
  - Noise (1σ): 2.5 mg
  - Bias Over Temperature: ±1 mg/°C
  - Input Voltage / Power
    - Operating Range: 15-30V DC
    - Typical Voltage: 24/28V DC
    - Typical Current: 130 mA
- **Environmental Compatibility**: MIL-STD-810F
  - High Temperature: Storage / Operation = Method 501.4
  - Low Temperature: Storage / Operation = Method 502.4
  - Vibration: Operation / Transportation = Method 514
  - Humidity: Cycle = Method 507.4
  - Low Pressure (Altitude): Storage / Operation = Method 500.4

### Features

- High Sensitivity Sensors
- Self-Eliminating ANY Temperature and Aging Effects
- High Immunity to Shock and Vibration
- Detailed Diagnostics Data Capability for Testing and Operation
- Redundant Communication With Diverse Interfaces
- Configurable Communication Protocol for Different Hardware and Software Applications
- Wide Operating Temperature Range
- Precision CNC Machined Aerospace Grade Aluminum Casing
- Extended Error Detection & Failsafe Measures
BAS-101 MINI IMU

BAS-101 is a military grade inertial measurement unit. Baykar MIMU - designed, developed and manufactured by Baykar is used as the primary sensor in sensor fusion and stochastic filtering applications. It is a tactical grade, high performance unit that provides accurate measurements.

ITS LOW SIZE, WEIGHT AND POWER CONSUMPTION MAKE IT A GOOD CHOICE

### Specifications

| Performance | Operating Temperature | ±40 °C...±55 °C |
|            | Output Rate           | 100 Hz          |
|            | Weight                | 61 g            |
|            | Connector             | Push-Pull Self-Latching Type |

<table>
<thead>
<tr>
<th>Gyro Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
</tr>
<tr>
<td>Random Walk</td>
</tr>
<tr>
<td>Bias Instability</td>
</tr>
<tr>
<td>Bias, Over Temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accelerometer Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
</tr>
<tr>
<td>Noise (µg)</td>
</tr>
<tr>
<td>Bias, Over Temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Voltage / Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Range</td>
</tr>
<tr>
<td>Environmental Compatibility (MIL-STD-810F)</td>
</tr>
<tr>
<td>High Temperature</td>
</tr>
<tr>
<td>Storage / Operation + Method 501.4</td>
</tr>
<tr>
<td>Low Temperature</td>
</tr>
<tr>
<td>Storage / Operation + Method 502.4</td>
</tr>
<tr>
<td>Vibration</td>
</tr>
<tr>
<td>Operation / Transportation + Method 514</td>
</tr>
<tr>
<td>Humidity</td>
</tr>
<tr>
<td>Cycle + Method 5074</td>
</tr>
<tr>
<td>Low Pressure (Altitude)</td>
</tr>
<tr>
<td>Storage / Operation + Method 500.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electromagnetic Compliance (MIL-STD-461F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated Susceptibility / Electric Field</td>
</tr>
<tr>
<td>Radiated Emissions / Electric Field</td>
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<th>Input Voltage / Power</th>
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<tbody>
<tr>
<td>Operating Range</td>
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<tr>
<td>Typical Current</td>
</tr>
<tr>
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</tr>
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<td>High Temperature</td>
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<td>Storage / Operation + Method 502.4</td>
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<td>Storage / Operation + Method 501.4</td>
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<tr>
<td>Low Temperature</td>
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<tr>
<td>Storage / Operation + Method 502.4</td>
</tr>
<tr>
<td>Vibration</td>
</tr>
<tr>
<td>Operation / Transportation + Method 514</td>
</tr>
<tr>
<td>Humidity</td>
</tr>
<tr>
<td>Cycle + Method 5074</td>
</tr>
<tr>
<td>Low Pressure (Altitude)</td>
</tr>
<tr>
<td>Storage / Operation + Method 500.4</td>
</tr>
</tbody>
</table>

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<tr>
<td>Radiated Susceptibility / Electric Field</td>
</tr>
<tr>
<td>Radiated Emissions / Electric Field</td>
</tr>
</tbody>
</table>

### Features

- High Sensitivity Sensors
- Self-Eliminating Any Temperature and Aging Effects
- High Immunity to Shock and Vibration
- Detailed Diagnostics Data Capability for Testing and Operation
- Configurable Communication Protocol for different Hardware and Software Applications
- Wide Operating Temperature Range
- Precision CNC Machined Aerospace Grade Aluminum Casing
- Extended Error Detection & Failsafe Measures

### Applications

- Unmanned Aerial Systems
- Control and Stabilization
- Measurement and Testing
- Vehicle Health Monitoring
- Robotics
BDS-W-040 CONTROL SURFACE

ROTARY ACTUATOR

BDS-W-040 Control Surface Rotary Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BDS-W-040 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

Advanced Features

- Max. Continuous Torque: 10.8 Nm
- Stall Torque: 50.8 Nm
- Nominal Speed: 136 °/sec
- Max Travel Angle: ±120º
- Operating Temperature: -40 °C…..+65 °C
- No Load Backlash: <1º
- Weight: 730 g
- Connector: MIL STD 38999 Series 3 connector, 19 PIN

Input Voltage / Power

- Operating Range: 18-28V DC
- Nominal Voltage: 24V DC
- Standby Current: 123 mA

Environmental Compatibility (MIL-STD-810F)

- High Temperature Storage / Operation: Method 501.4
- Low Temperature Storage / Operation: Method 502.4
- Vibration: Operation / Transportation: Method 514 Cycle Method 507.4
- Humidity Cycle: Method 507.4

Electromagnetic Compliance (MIL-STD-461F)

- RS103: Radiated Susceptibility / Electric Field
- RE102: Radiated Emissions / Electric Field

Specifications

- Dual Redundant Communication via CANbus & RS485
- Gradual Stall for Overload Protection
- Brushless Permanent Magnet DC Motor
- Robust & High Fidelity Controller Design
- Advanced Error Detection & Failsafe Measures
- High Power to Weight Performance
- Contactless Shaft Position Sensor
- Precision CNC Machined Aerospace Grade Aluminuim Casing

End User Software Parameters

- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

Applications

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler
BLS-B-040 BRAKE SYSTEM
LINEAR ACTUATOR

BLS-B-040 Brake System Linear Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BLS-B-040 provides failsafe and jitterless performance with its robust, advanced control system and redundant communication architecture.

### Advanced Features

**Performance**

- **Power**: 40 W
- **Max. Continuous Force**: 410 N
- **Operating Temperature**: -40 °C...+65 °C

**Input Voltage / Power**

- **Operating Range**: 16-28V DC
- **Typical Voltage**: 24V DC
- **Standby Current**: 125 mA

**Environmental Compatibility (MIL-STD-810F)**

- **High Temperature**: Storage / Operation = Method 501.4
- **Low Temperature**: Storage / Operation = Method 502.4
- **Vibration**: Operation / Transportation = Method 514
- **Humidity**: Cycle = Method 507.4

**Electromagnetic Compliance (MIL-STD-461F)**

- **RS103**: Radiated Susceptibility / Electric Field
- **RE102**: Radiated Emissions / Electric Field

**End User Software Parameters**

- **Dead Band**: Null Position - Current Limits
- **Temperature Limits**: Control Parameters
- **Detailed Diagnostics Data Output**

**Applications**

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler

**Specifications**

- Dual Redundant Communication via CANbus & RS485
- Gradual Stall for Overload Protection
- Brushless Permanent Magnet DC Motor
- Robust & High Fidelity Controller Design
- Advanced Error Detection & Failsafe Measures
- High Power to Weight Performance
- Contactless Shaft Position Sensor
- Precision CNC Machined Aerospace Grade Aluminum Casing
BDS-208 DUAL REDUNDANT SERVO ACTUATOR

BDS-208 Dual Redundant Servo Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BDS-208 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

Advanced Features

- **Input Voltage / Power**
  - Operating Range: 18-28V DC
  - Typical Voltage: 24V DC
  - Standby Current: 70 mA
- **Environmental Compatibility (MIL-STD-810F)**
  - High Temperature: Storage / Operation = Method 501.4
  - Low Temperature: Storage / Operation = Method 502.4
- **Electromagnetic Compliance (MIL-STD-461F)**
  - Radiated Susceptibility / Electric Field: RS103
  - Radiated Emissions / Electric Field: RE102

Specifications

- **Dual Redundant Communication via CANbus & RS485**
- **Gradual Stall for Overload Protection**
- **Brushless Permanent Magnet DC Motor**
- **Robust & High Fidelity Controller Design**
- **Advanced Error Detection & Failsafe Measures**
- **High Power to Weight Performance**
- **Contactless Shaft Position Sensor**
- **Precision CNC-Machined Aerospace Grade Aluminum Casing**

End User Software Parameters

- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

Applications

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler
BDS-008 Rotary Servo Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BDS-008 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

### Specifications
- Dual Redundant Communication via CANbus & RS485
- Gradual Stall for Overload Protection
- Brushless Permanent Magnet DC Motor
- Robust & High Fidelity Controller Design
- Advanced Error Detection & Failsafe Measures
- High Power to Weight Performance
- Contactless Shaft Position Sensor
- Precision CNC Machined Aerospace Grade Aluminum Casing

### Advanced Features
- **Performance**
  - Power: 80 W
  - Nominal Speed: 132 °/sec
  - Max. Continuous Torque: 1.5 Nm
  - Max. Torque: 3.5 Nm
  - Operating Temperature: -40 °C … +65 °C
  - Weight: 0.341 kg
  - Connector: MIL STD 38999 Series 3 connector, 19 PIN

- **Input Voltage / Power**
  - Operating Range: 18-28V DC
  - Typical Voltage: 24V DC
  - Standby Current: 70 mA

- **Environmental Compatibility (MIL-STD-810F)**
  - High Temperature: Storage / Operation = Method 501.4
  - Low Temperature: Storage / Operation = Method 502.4
  - Vibration: Operation / Transportation = Method 514
  - Humidity: Cycle = Method 507.4

- **Electromagnetic Compliance (MIL-STD-461F)**
  - RS103: Radiated Susceptibility / Electric Field
  - RE102: Radiated Emissions / Electric Field

### End User Software Parameters
- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

### Applications
- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler
BDS-G-040 LANDING GEAR

ROTARY ACTUATOR

BDS-G-040 Landing Gear Rotary Actuator System is designed and built to match performance characteristics of modern UAV Flight Control Systems. BDS-G-040 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

**Advanced Features**

- **Performance**
  - Maximum Torque: 12 Nm
  - Max. Continuous Torque: 10.8 Nm
  - Stall Torque: 40 Nm
  - Nominal Speed: 95 °/sec
  - Max. Travel Angle: ±120°
  - Operating Temperature: -40 °C…+65 °C
  - No Load Backlash: <1º
  - Weight: 730 g

- **Input Voltage / Power**
  - Operating Range: 18-28V DC
  - Typical Voltage: 24V DC
  - Standby Current: 70 mA

- **Environmental Compatibility (MIL-STD-810F)**
  - High Temperature: Storage / Operation = Method 501.4
  - Low Temperature: Storage / Operation = Method 502.4
  - Vibration: Operation / Transportation = Method 514
  - Humidity: Cycle = Method 507.4

- **Electromagnetic Compliance (MIL-STD-461F)**
  - Radiated Susceptibility / Electric Field
  - Radiated Emissions / Electric Field

- **Connectors**
  - Connector: MIL STD 38999 Series 3 connector, 19 PIN

**Specifications**

- **Dual Redundant Communication via CANbus & RS485**
- **Gradual Stall for Overload Protection**
- **Brushless Permanent Magnet DC Motor**
- **Robust & High Fidelity Controller Design**
- **Advanced Error Detection & Failsafe Measures**
- **High Power to Weight Performance**
- **Contactless Shaft Position Sensor**
- **Precision CNC Machined Aerospace Grade Aluminum casing**

**End User Software Parameters**

- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

**Applications**

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler

---

**SUBSYSTEMS • AVIONICS • FLIGHT CONTROL SYSTEMS**
BLS-L-040 LANDING GEAR
LINEAR ACTUATOR

BLS-L-040 Landing Gear Linear Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BLS-L-040 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

---

**Advanced Features**

<table>
<thead>
<tr>
<th>Performance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>40 W</td>
</tr>
<tr>
<td>No Load Feed Velocity</td>
<td>22 mm/sec</td>
</tr>
<tr>
<td>Load Feed Velocity</td>
<td>18 mm/sec</td>
</tr>
<tr>
<td>Max. Continuous Force</td>
<td>468 N</td>
</tr>
<tr>
<td>Max. Force</td>
<td>2463 N</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 °C to +65 °C</td>
</tr>
<tr>
<td>Weight</td>
<td>707 g</td>
</tr>
<tr>
<td>Connector</td>
<td>MIL STD 58999 Series 3 connector, 19 PIN</td>
</tr>
</tbody>
</table>

**Input Voltage / Power**

- Operating Range: 18-28V DC
- Typical Voltage: 24V DC
- Standby Current: 125 mA

**Environmental Compatibility (MIL-STD-810F)**

- High Temperature: Storage / Operation + Method 501.4
- Low Temperature: Storage / Operation + Method 502.4
- Vibration: Operation / Transportation + Method 514
- Humidity: Cycle + Method 507.4

**Electromagnetic Compliance (MIL-STD-461F)**

- RS103: Radiated Susceptibility / Electric Field
- RE102: Radiated Emissions / Electric Field

---

**Specifications**

- Dual Redundant Communication via CANbus & RS485
- Gradual Stall for Overload Protection
- Brushless Permanent Magnet DC Motor
- Robust & High Fidelity Controller Design
- Advanced Error Detection & Failsafe Measures
- High Power to Weight Performance
- Contactless Shaft Position Sensor
- Precision CNC Machined Aerospace Grade Aluminum Casing

**End User Software Parameters**

- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

**Applications**

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler

---

**Performance**

- Power: 40 W
- No Load Feed Velocity: 22 mm/sec
- Load Feed Velocity: 18 mm/sec
- Max. Continuous Force: 468 N
- Max. Force: 2463 N
- Operating Temperature: -40 °C to +65 °C
- Weight: 707 g

**Connector**

- MIL STD 58999 Series 3 connector, 19 PIN

**Environmental Compatibility**

- High Temperature: Storage / Operation + Method 501.4
- Low Temperature: Storage / Operation + Method 502.4
- Vibration: Operation / Transportation + Method 514
- Humidity: Cycle + Method 507.4

**Electromagnetic Compliance**

- RS103: Radiated Susceptibility / Electric Field
- RE102: Radiated Emissions / Electric Field

---

**Input Voltage / Power**

- Operating Range: 18-28V DC
- Typical Voltage: 24V DC
- Standby Current: 125 mA

**Environmental Compatibility (MIL-STD-810F)**

- High Temperature: Storage / Operation + Method 501.4
- Low Temperature: Storage / Operation + Method 502.4
- Vibration: Operation / Transportation + Method 514
- Humidity: Cycle + Method 507.4

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**Electromagnetic Compliance (MIL-STD-461F)**

- RS103: Radiated Susceptibility / Electric Field
- RE102: Radiated Emissions / Electric Field

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**End User Software Parameters**

- Dead Band - Null Position - Current Limits
- Temperature Limits - Control Parameters
- Detailed Diagnostics Data Output

---

**Applications**

- Unmanned Aerial Systems
- Control Surfaces
- Utility Actuation
- Throttle Control
- Door
- Spoiler
**BLS-T-060 CONTROL SURFACE**

**LINEAR SERVO ACTUATOR**

BLS-T-060 Control Surface Linear Servo Actuator System is designed and built to meet performance requirements of modern UAV Flight Control Systems. BLS-T-060 provides failsafe and jitterless performance with its robust advanced control system and redundant communication architecture.

### Advanced Features

**Performance**

- **Power**: 60 W
- **No Load Feed Velocity**: 84 mm/sec
- **Load Feed Velocity**: 75 mm/sec
- **Max. Continuous Force**: 523 N
- **Max. Force**: 3,293 N
- **Operating Temperature**: -40 °C to +65 °C
- **Weight**: 0.844 kg
- **Connector**: MIL STD 5099, Series 3 connector, 19 PIN

**Input Voltage / Power**

- **Operating Range**: 18-28V DC
- **Typical Voltage**: 24V DC
- **Standby Current**: 191 mA

**Environmental Compatibility (MIL-STD-810F)**

- **High Temperature**: Storage / Operation = Method 501.4
- **Low Temperature**: Storage / Operation = Method 502.4
- **Vibration**: Operation / Transportation = Method 514
- **Humidity**: Cycle = Method 507.4

**Electromagnetic Compliance (MIL-STD-461F)**

- **RS103**: Radiated Susceptibility / Electric Field
- **RE102**: Radiated Emissions / Electric Field

### Specifications

- **Dual Redundant Communication via CANbus & RS485**
- **Gradual Stall for Overload Protection**
- **Brushless Permanent Magnet DC Motor**
- **Robust & High Fidelity Controller Design**
- **Advanced Error Detection & Failsafe Measures**
- **High Power to Weight Performance**
- **Contactless Shaft Position Sensor**
- **Precision CNC Machined Aerospace Grade Aluminum Casing**

### End User Software Parameters

- **Dead Band** - Null Position - Current Limits
- **Temperature Limits** - Control Parameters
- **Detailed Diagnostics Data Output**

### Applications

- **Unmanned Aerial Systems**
- **Control Surfaces**
- **Throttle Control**
- **Door**
- **Spoiler**

**Input Voltage / Power**

- **Operating Range**: 18-28V DC
- **Typical Voltage**: 24V DC
- **Standby Current**: 191 mA

**Electromagnetic Compliance (MIL-STD-461F)**

- **RS103**: Radiated Susceptibility / Electric Field
- **RE102**: Radiated Emissions / Electric Field

**Environmental Compatibility (MIL-STD-810F)**

- **High Temperature**: Storage / Operation = Method 501.4
- **Low Temperature**: Storage / Operation = Method 502.4
- **Vibration**: Operation / Transportation = Method 514
- **Humidity**: Cycle = Method 507.4

**Electromagnetic Compliance (MIL-STD-461F)**

- **RS103**: Radiated Susceptibility / Electric Field
- **RE102**: Radiated Emissions / Electric Field
The actively balanced Lithium based smart battery unit is the lightest weight & highest energy level battery pack designed for Unmanned Applications. The system is built to military standards and has special protective measures to ensure reliability and performance.

### Technical Specifications

**Voltage**
- 18-29 V DC

**Protection**
- Over Voltage Protection (OVP)
- Over Current Protection (OCP)
- ESD, EMI, EMC Protection

**Number of Power Distributed Unit**
- > 50
- > 2000 W

**Communications**
- MIL-PRF-81336
- MS 27742

**Standards of Switching Component**
- MIL-R-83536
- MS 3320

**Standards of FUSE Component**
- MIL-DTL-5015
- MIL-C-5015

**Connectors**
- MIL-DTL-38999
- MIL-C-5015

**Operating Temperature**
- -60 °C to +60 °C

**Features**
- Redundant control circuit and power distribution of flight and mission critical system
- Redundant communication system
- Original battery charging system over alternator
- Detailed power status, fault log for all avionics
- Power supply to more than 50 avionics
- Monitoring of voltage, current and circuit breaker status
- Power critical mode (switch off all non-flight-critical units)
- Detailed list of battery and alternator faults
- MIL-PRF-81336, MIL-12742, MIL-R-83536 standard power switching components
- MIL-DTL-38999, MIL-C-5015 standard connectors
- Alternator control
- Smart battery control
- Fault control
- Voltage regulation
- Temperature control

**Capacity**
- 20 Ah

**Voltage**
- Min 18V DC
- Normal 22.2V DC
- Max 25.2V DC

**Current**
- Charge 40 A
- Discharge 100 A
- Instant Discharge 200 A (<10 s)

**Nominal Current**
- Charge 10 A
- Discharge 10 A

**Storage Temperature**
- -10 °C to +40 °C
- Recommended 25 °C (±5 °C)

**Cell Arrangement**
- 6S-1P

**Weight**
- 4,300 g

**Carbon case and aluminum base**
- Lightweight box structure
- Heat isolation layers for cells
- Evacuation hole for pressure security
- 24V DC and 12V DC Outputs
- Blade type fuse holder at external 24V and 12V output terminal
- Suitable endings for ring tongue terminals
- MIL-DTL-38999 type control connector
- Internal battery control unit
- Capability to increase capacity by heating cells in cold weathers
- Internal active balancing system
- 5 level battery indicator and error indicator on battery box
- Button activated LED indicator
- 2 open-collector pins on the circular connector for external LED indicator
- Redundant communication - Dual CAN
- Individual temperature sensors for battery cells and control circuit
Baykar Bomb Rack Unit has been developed in MIL-STD-8591 and MIL-STD-1760E standards for arming the tactical UAVs. Aluminum alloys are extensively used in production. Military standard connectors are used on uniquely designed control board and store interface connectors.

Store interface connector can be mounted to two different points if needed. Different types of sway braces can be used for various munitions.

Safety and ease of use is in foreground in the design. Armament can be easily done by using arming knob on the system. On the cruise, system remains in safety lock mode both electrically and mechanically. On the ground, in case, system can be disarmed via onboard manual release mechanism.

**AIR DATA RECORDER**

Air Data Recorder is a unit that is capable of recording an analog video input and one serial port data with AES-256 encryption. The unit has a rugged frame that can operate in a broad temperature range. Small size and lightweight structure with solid state component architecture offers an excellent solution for UAV systems.

**Technical Specifications**

- **Design Standard**: MIL-STD-8591 and MIL-STD-1760E
- **Hook Class**: 100 lb
- **Dimensions**: 106 x 208 x 103 mm
- **Weight**: ~1.000 g
- **Construction**: Aluminum
- **Operating Temperature**: -40 °C – +60 °C
- **Supply Voltage**: 18 – 28V DC
- **Power Consumption**: 60 W max
- **Interface**: 2x Mighty Mouse Series Connector (13 and 19 pin)
- **Communication**: 1 x RS232 for Data Recording, 1 x RS232 for Diagnostics and Control, 1 x 10/100/1000 Mbit Ethernet
- **Technical Specifications**

- **Horizontal FOV**: 140°
- **Operating Temperature**: -40 °C – +60 °C
- **Supply Voltage**: 18 – 28V DC
- **Interface**: 1 x Mini BNC (Analog Video), 1 x Circular Power Connector

**TAIL CAMERA**

Tail Camera is an analog output PAL system camera with a wide angle of view for aerial applications. Heated lens allows a clear view in humid conditions.

**Technical Specifications**

- **Advanced Specifications**: Mechanical Adjustment for Field of View Orientation, Heated Lens for Fog Protection

**BAYKAR BOMB RACK UNIT**

**Advanced Specifications**

- **Operational Temperature**: -40 °C - +55 °C
- **Supply Voltage**: 18 - 28V DC
- **Power Consumption**: 60 W max
- **Interface**: 2x Mighty Mouse Series Connector (13 and 19 pin)
- **Communication**: 1 x Mini BNC (Analog Video)

**Technical Specifications**

- **Design Standard**: MIL-STD-8591 and MIL-STD-1760E
- **Hook Class**: 100 lb
- **Dimensions**: 106 x 208 x 103 mm
- **Weight**: ~1.000 g
- **Construction**: Aluminum
- **Operating Temperature**: -40 °C – +60 °C
- **Supply Voltage**: 18 – 28V DC
- **Power Consumption**: 60 W max
- **Interface**: 1 x Mini BNC (Analog Video), 1 x Circular Power Connector

A VERY LIGHT SOLUTION FOR THE SMART MICRO MUNITIONS!
MINI UAV
VIDEO LINK

Baykar UAV Video Link is an analog video and audio transceiver designed for harsh environments. It is ideal for law enforcement, surveillance and other applications requiring high sensitivity video and audio transmission in a compact package.

Applications
- Real-Time Video Surveillance
- Law Enforcement
- UAVs and UGVs
- Covert wireless video and audio transmission

Advanced Features
- Complete FM Video/Audio Transceiver System
- No Latency Reception With Excellent Sensitivity
- Transmission of Analog Audio and Video Over Distances Up To 32 Km (20 Mi)
- Operation In L, S or C Bands at Factory-Preset or User-Selectable Frequencies
- Remote Control Via Rs232
- Crystal Clear Video Output Independent of the Video Format (Ntsc, Pal or Secam)
- Stereo Audio Output
- Extremely Compact and Rugged Package (86x81.5x17mm)
- Weight 135 g
- Proven Track Record
- Fiber Glass Radome Structure

Technical Specifications

RF Characteristics
- Frequency Bands: L, S, or C Band
- Frequency Selection: Full Band Channelized or Up To 16 Fixed Channels
- Frequency Stability: ±15 ppm
- Sensitivity: 90 dBm
- RF Input Impedance: 50 Ohm Nominal, VSWR 2:1 Maximum

Video & Audio Characteristics
- Modulation Type: Analog FM
- Video Standard: NTSC, PAL or SECAM
- Video Output Impedance: 75 Ohm Nominal
- Video Output Level: 1 Vpp (typical)
- Video SNR: 40 dB (typical)
- Audio Output Level: 5 Vpp (Max)
- Audio Output Impedance: 10 kOhm (typical)
- Audio SNR: 50 dB (typical)
- Audio Frequency Response: 50 Hz to 18 kHz (typical)
- Input Voltage: 8V to 20V DC Reverse Polarity Protected
- Current Draw (Typical at 12V): 200 mA (typical)

Mechanical
- Material: CNC Machined T6061-T6 Aluminum
- Finish: Nickel Plated or Gold Iridite
- Dimensions: 86 x 81.5 x 17 mm
- Weight: 135 g
- RF Output Connector: SMA Female

Environmental
- Operating Temperature: -40 °C to +55 °C
- Humidity: Up to 95%
The Bayraktar digital video link is a low-cost and low-swipe video transmission and reception system for Intelligence, Surveillance and Reconnaissance (ISR) applications. It features dual H.264 compression engines capable of encoding HD and SD videos up to 1080p resolution. In addition to dual integrated H.264 compression, input video decoding of HD-SDI and analog video are performed on-board. As a complete end-to-end solution, Baykar’s digital video link system requires no additional hardware for deployment.

**Application Areas**
- Airborne ISR
- IP video surveillance

**Technical Specifications**

**Transmitter Unit (TX)**
- Up to 150 km LOS range with Bayraktar Digital RX and PA
- Simultaneous transmission of 1 HD and 1 SD video
- Selectable modulation: L, S or C Band
- Low power consumption
- On-board HD SDI and analog decoding
- On-board dual H.264 encoders

**Receiver Unit (RX)**
- RF to ethernet based receiver unit
- Integrated LNA (0.56dB NF)
- Various video formats: 1080p30, 1080p25, 1080i60, 720p60, PAL, NTSC

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Size</th>
<th>Weight</th>
<th>Operation temp range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>136.6 x 118 x 52 mm</td>
<td>320 g</td>
<td>-40 °C...+60 °C</td>
</tr>
<tr>
<td>RX</td>
<td>119 x 118 x 40 mm</td>
<td>320 g</td>
<td>-40 °C...+60 °C</td>
</tr>
</tbody>
</table>

**Power Amplifier**
- Low EVM <3 % for QAM64
- Adjustable output power: +20 to +43 dBm
- Good efficiency: 45 W consumption @ 10 W RF output
- Integrated isolator
- Compact and rugged package
- Size: 124 x 113 x 75 mm
- Weight: 650 g
- Operation temp range: -40 °C...+55 °C
AUTOMATIC TRACKING ANTENNA

Automatic Tracking Antenna System (ATAS) provides a complete and highly efficient ground station solution between the ground and air for the transmission of UAV video and other data. A primary objective of the antenna is to ensure transmitted data is never lost. This dual-axis auto-tracking antenna has up to 150 km signal range. Antennas can automatically locate the RF, GPS or telemetry signals and track them quickly. All major elements are housed inside the radome. Components are transported separately into the field and the system is easily and quickly assembled.

Tripod Specifications

- Load Capacity: 90 kg/200 lbs
- Max. Height: 215 cm/85 in
- Min. Height: 105 cm/41,5 in
- Weight: 19,1 kg/42 lbs
- Maximum Spread Diameter: 205 cm/81 in
- Column Travel: 45 cm/18 in
- Transport dimension: 17,5 x 49,5 (44 x 124)

Power

- Voltage: 12V DC Min
- Nominal: 16V DC
- Max: 24V DC
- Current Value: 1,2 A Nominal
- Power Dissipation: 20 W

Internal Sensors

- GNSS Receiver: GPS, GLONASS
- Horizontal Position Sensitivity: 2,5 m (CEP % 50, 24 hour Stati)
- Initial resolution time: 26 s
- 3 Axis Magnetometer
- Range of measuring: ±2 Gauss

Mechanics

- 360 degree infinite tracking
- Sewing from +90 to -90 degrees
- 5-level adjustable height mounting feet
- Easy installation for antenna and system connections

INPUT/OUTPUT

- 26 Pin Mighty Mouse Series Connector
- 1 unit Ethernet bus
- Radio Sensitivity: -108 dBm
- Output Power: 1 W

MINI AUTOMATIC TRACKING ANTENNA

Mini Automatic Tracking Antenna System (Mini ATAS) is a unit that provides video, telemetry and telecommunication between the UAV and the Ground Control Station by pointing the ground data terminal to the mini UAV automatically. It consists of an automatic pointing antenna system, an ATAS control unit, a tracking mechanism, a tracking antenna cable set, a telemetry and telecommunications antenna, video receiver antenna and several feet of cables.

Interior Equipments

- Operating Temperature: -30 C°...+55 C°

Physical Specifications

- Sizes: 741 X 1.062 X 185 mm
- Total Weight: 9.320 g
BRINGING IT ALL TOGETHER.

SUPPORT AND SERVICES
Baykar's maintenance policy is to assist and support its Clients to get the most out of their UAV systems. To keep UAVs operational most of the times, Baykar provides technical support to Client technical staff for repairs and maintenance works at line level; and carries out 1000 flight hr major overhauls with its own staff. Baykar monitors and proactively plans major overhaul needs of its Clients in order to improve operational readiness of the systems and minimize downtime. Scheduled maintenance is planned beforehand and required parts and technical staff is deployed before the overhaul time is reached.

Availability of spare parts for both scheduled and unscheduled maintenance operations critically affect operational readiness of the systems. For successful UAV operations, Baykar deploys field depots at Client bases. Scheduled maintenance spare parts are planned and transferred to these depots. For quick fixes and unscheduled maintenance works, an inventory of critical parts is kept at these depots. Through years of operational usage experience, additional critical parts like avionics and engine components are also stored in these depots to increase part and component availability.

Our Clients benefit from system-level warranty for each delivered system and is applicable. The warranty period commences with the delivery of UAS and is valid for the following durations per each system:
- For TB2 UAS, 2 calendar years or 4000 flight hours, whichever is reached first
- For MINI UAS, 2 calendar years or 600 flight hours, whichever is reached first

Warranty package includes technical support during the warranty period and for TB2 platforms, it additionally covers major overhauls at every 1000 flight hours.

After the system warranty period ends, maintenance and repairs are handled as per component-based warranty.

Baykar provides two types of training programs for our Clients’ technical staff. All training programs are provided by Baykar at its Kesan facility - having its own UAV fleet and runway. Trainings are conducted in two phases, namely theoretical/system and applied trainings. The TB2 UAS curriculum includes a one week introduction, followed by three to four weeks of theoretical and system trainings, and seven to eight weeks of flight simulations, payload operator flight trainings and applied flight trainings. The MINI UAS curriculum includes four weeks of theoretical and system trainings followed by five weeks of flight simulations and applied flight trainings. During the applied flight trainings, pilot candidates actually fly Baykar’s TB2 and MINI UAS.

Upon the completion of training, evaluation exams are conducted for each training module and successful candidates are awarded their UAS training certificates.

Warranty package includes technical support during the warranty period and for TB2 platforms, it additionally covers major overhauls at every 1000 flight hours.

After the system warranty period ends, maintenance and repairs are handled as per component-based warranty.

Baykar’s maintenance policy is to assist and support its Clients to get the most out of their UAV systems. To keep UAVs operational most of the times, Baykar provides technical support to Client technical staff for repairs and maintenance works at line level, and carries out 1000 flight hr major overhauls with its own staff. Baykar monitors and proactively plans major overhaul needs of its Clients in order to improve operational readiness of the systems and minimize downtime. Scheduled maintenance is planned beforehand and required parts and technical staff is deployed before the overhaul time is reached.

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Software updates:
Embedded system and user interfaces of the components are updated in order to meet Clients’ demands and operational requirements. Critical updates are scheduled with immediate action to keep the system availability at its maximum.