

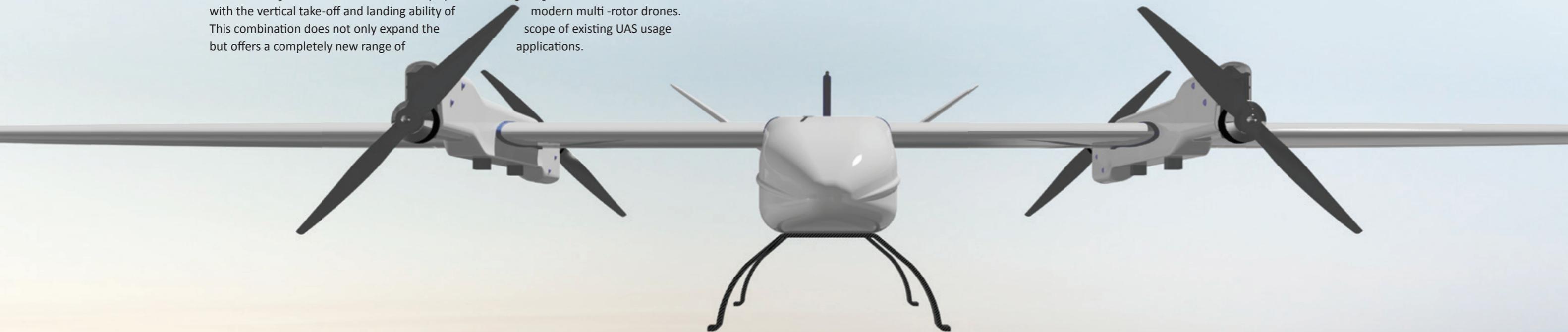


Germandrones develops and produces unmanned aerial systems (UAS) for professional purposes. We offer UAS based on true German engineering standards for a multitude of applications, like surveying and mapping, search and rescue, security and surveillance as well as precision agriculture. For each of those use cases, unique sensors and processing technologies are used to solve real-world problems.

Our team combines quality engineering, research and development with a passion for innovative technologies. We are striving to design products that prove themselves in the real world and help our customers to overcome current limitations.

Our UAS Songbird combines the efficiency, speed and long range of traditional aircraft with the vertical take-off and landing ability of modern multi-rotor drones. This combination does not only expand the scope of existing UAS usage but offers a completely new range of applications.

- SURVEYING AND MAPPING
- SEARCH AND RESCUE
- SECURITY AND SURVEILLANCE
- PRECISION FARMING



The Songbird is the result of years of testing and optimization. Combining the advantages of traditional aircraft with those of multi-rotor drones, this new type of UAS greatly expands your operational abilities. Due to its vertical take-off and landing (VTOL) capability no runway for take-off or landing is necessary while keeping all the benefits of a fixed wing aircraft.

Advanced aerodynamical design and uncompromising lightweight construction result in flight times of up to two hours, which is twice the time of comparable systems. Depending on the payload, the area coverage is up to 25km<sup>2</sup> (10sq mi). Our sophisticated autopilot with automatic take-off and landing features enables the UAS to be flown by a single pilot/operator, no prior flight experience is required. This, together with the long flight time and quick and tool-less assembly ensures a high return on your investment.



The Songbird allows for a payload of up to 2 kg, enabling operation with large battery packs, dual cameras or highly specialized sensors, such as LIDAR or real-time mapping solutions. The take-off weight (TOW) always remains below 10 kg. The Songbird has been designed by engineers with years of field experience and with knowledge about what your equipment must endure in the real world. It benefits from testing under extreme weather conditions, from the African desert to tropical jungles the Songbird can operate during wind speeds of up to 19 m/s as well extreme heat or cold and light rain.

After a brief training by our staff, anyone will be able to use the Songbird safely, reliably and efficiently. We can also help you to find the right sensors and technical solutions for your specific use-case.





## SURVEYING AND MAPPING

The Songbird, equipped with high-precision cameras and GPS is the premier solution for surveying, mapping and documentation tasks. The resulting imagery and 3D models meet industrial requirements for example, for production monitoring and inventory management in open-pit mining, road construction, detection of tectonic movements or monitoring of weirs and dykes.

The Songbird can be taken into the field by a single operator. It is transported in a sturdy aluminium box and is assembled and ready to fly in less than 10 minutes. You can survey areas of up to 25 km<sup>2</sup> in a single flight, making it possible to quickly gather precise information of very large areas.



A large fire with a firefighter on a bucket. The fire is intense, with bright orange and yellow flames and thick black smoke rising into the sky. A firefighter in full gear is positioned on a white bucket, aiming a hose at the fire. The scene is dramatic and captures the scale of the emergency.

## SEARCH AND RESCUE

The Songbird, equipped with a real-time mapping kit, is a new tool for first responders and government agencies operating during natural disasters. Less than five minutes after its return from mission, you will be presented with a precise, geo-referenced image of the disaster zone, enabling you to plan ahead and work more efficiently to save lives and prevent your rescue workers from getting into dangerous or stressful situations. The mapping kit can be exchanged against a stabilized video gimbal with a remotely transmitted high-definition live stream with additional thermal sensors to assist the ground operators.

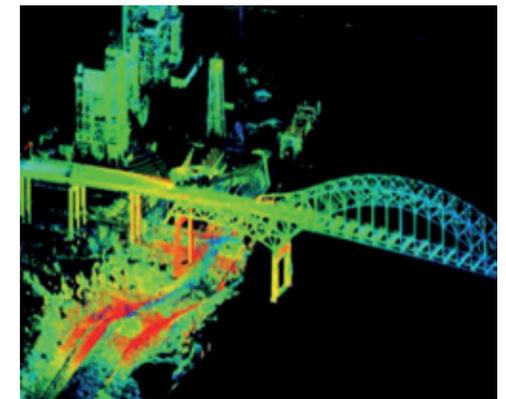
This enables you to have a go-ahead crew to operate the Songbird and take it with them even in the most challenging circumstances.





## SECURITY AND SURVEILLANCE

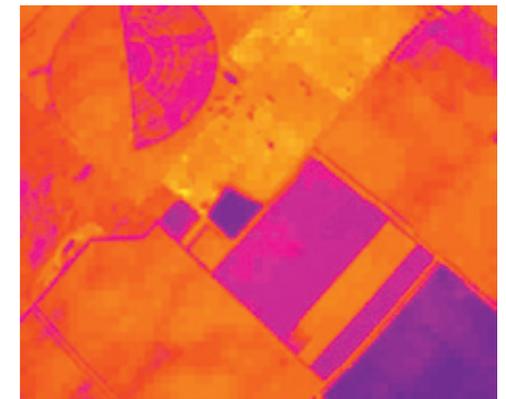
The Songbird, equipped with stabilized video gimbal with a remotely transmitted high-definition live stream enables you to observe high-risk areas from a safe distance and over long periods of time. Whether it is an accident zone where you need frequent updates on the situation or a no-trespassing area, live video in the optical and/or thermal spectrum gives you the ability to make informed decisions. It is possible to monitor large factory sites, airports, railways, pipelines or powerlines continuously due to the long flight time of up to two hours.





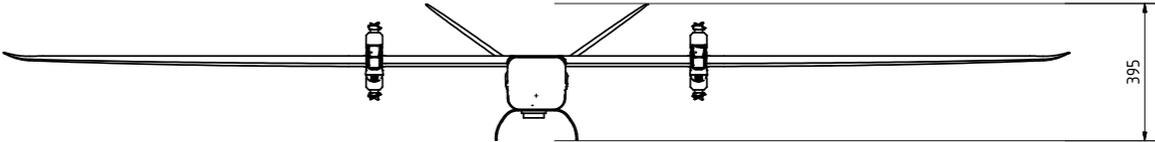
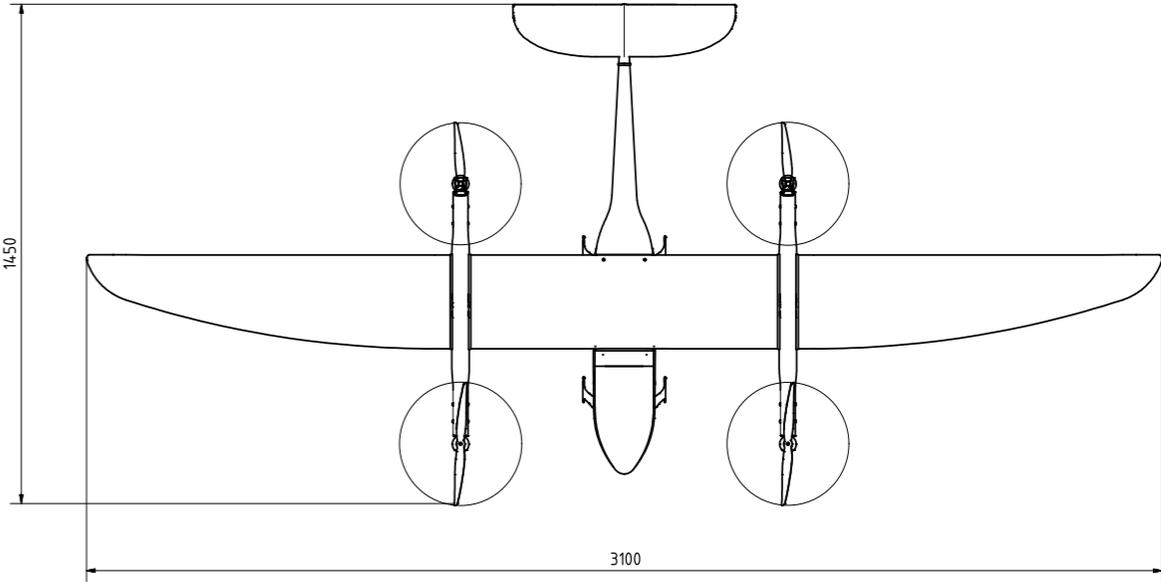
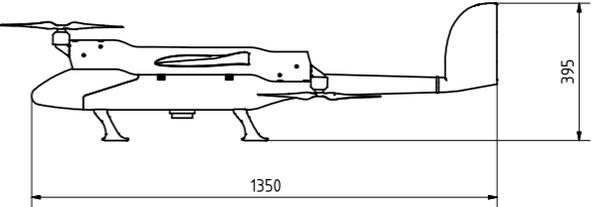
## PRECISION FARMING

The Songbird, equipped with optical and multi-spectral cameras, helps you to enhance crop yield through a variety of ways. Determining plant health, pest infestation or overall biomass can help you to optimize pesticide usage. Another application is the optimization of irrigation equipment which is especially relevant in areas struck with frequent droughts. Modern plant analysis software can be employed to gain the best insight into the status of your crops and can be used to predict growth over the seasons.



# SONGBIRD - OVERVIEW

Wing Span:	3.10 m
Body:	Fiberglass and Carbon Composite
Maximum Payload:	2 kg
Max. Take-Off Weight:	10 kg
Max Speed:	45 m/s (160 km/h)
Working Speed:	Approx. 18 m/s (Depending on Use Case)
Max. wind speed:	19 m/s
Flight time in standard configuration:	> 60 min
Propulsion:	Four Electric Motors
Rechargeable Battery Pack: 6s – 22,000mAh	6s - 22,000 mAh
Flight Controller:	Own Development (Hard- and Software)
Radio Control:	2.4 GHz
Telemetry Frequency:	433 MHz or 868 MHz
Safety Features:	Return to Launch Position Hold Autonomous Take-Off and Landing
Set Up Time:	< 10 min





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